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IMPACT OF OFFICE AUTOMATION IN THE INSURANCE INDUSTRY.

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BUREAU OF LABOR STATISTICS (DEPT. OF LABOR)

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THE EXTENT AND PACE OF THE ADOPTION OF ELECTRONIC DATA PROCESSING TECHNOLOGY AMONG INSURANCE CARRIERS AND ITS EFFECTS ON INSURANCE OFFICE EMPLOYEES WERE STUDIED. QUESTIONNAIRE RESPONSES FROM 410 FIRMS, REPRESENTING ABOUT 89 PERCENT OF ALL INSURANCE CARRIER EMPLOYMENT, IDENTIFIED 305 FIRMS WITH ELECTRONIC DATA PROCESSING. OF THESE, 81 PERCENT RESPONDED TO A SECOND QUESTIONNAIRE REQUESTING DETAILED INFORMATION. ADDITIONAL DATA WERE PROVIDED THROUGH INTERVIEWS WITH 13 INSURANCE EXECUTIVES AND ANALYSIS OF RELEVANT PUBLICATIONS. FINDINGS INCLUDED--(1) INSURANCE COMPANIES ACCOUNTING FOR 80 PERCENT OF TOTAL INSURANCE CARRIER EMPLOYMENT HAD INSTALLED COMPUTERS, (2) AUTOMATION OF INPUT AND THE USE OF DATA TRANSMISSION NETWORKS WILL GROW, (3) THE GROWTH RATE OF OFFICE STAFF WILL DECLINE IN COMPUTERIZED COMPANIES, (4) THE USE OF ELECTRONIC DATA PROCESSING REDUCED EMPLOYMENT OF PUNCH CARD TABULATING MACHINE OPERATORS, CALCULATORS, AND ROUTINE CLERICAL RECORD KEEPING EMPLOYEES, (5) THE SLOWDOWN IN THE GROWTH RATE OF OFFICE STAFF MAY REDUCE OFFICE OPPORTUNITIES FOR NEW JOB SEEKERS, AND (6) OFFICE EMPLOYMENT WILL PROBABLY INCREASE ONLY 5 TO 10 PERCENT FROM 1965 TO 1975. THE IMPACT OF THE SLOWER GROWTH OF CLERICAL JOBS IN CITIES IN WHICH INSURANCE COMPANIES HAVE BEEN THE MAJOR SOURCE OF EMPLOYMENT FOR YOUNG WOMEN, AND THE PROBABLE INCREASED EMPLOYEE SELECTIVITY BY PERSONNEL OFFICES FOR ENTRY POSITIONS IN INSURANCE COMPANIES HAVE IMPLICATIONS FOR MANPOWER TRENDS AND DEVELOPMENT OF THE ECONOMY. THIS DOCUMENT IS AVAILABLE AS FS1.26--966 FOR 55 CENTS FROM SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, D.C., 20402. (PS)

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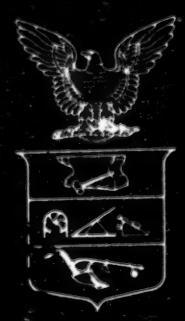

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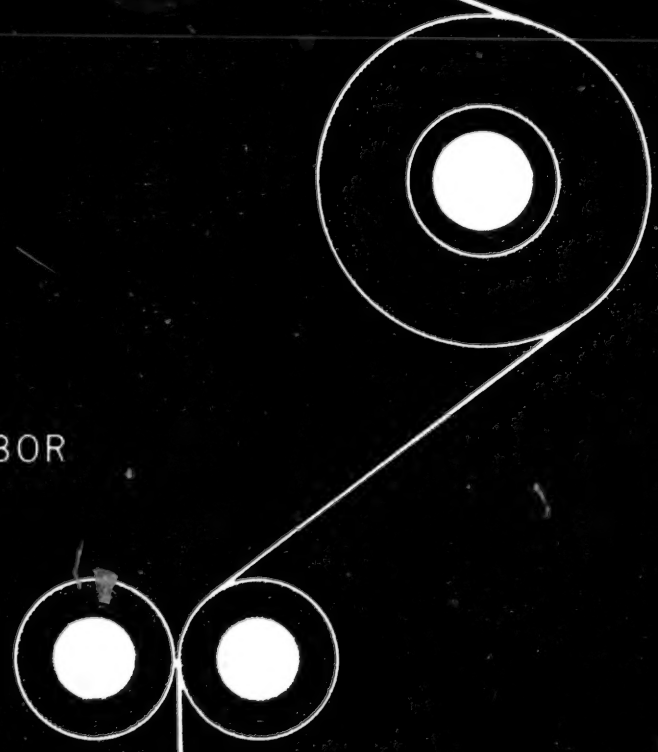

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INSURANCE
INDUSTRY

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Preface

Under the Manpower Development and Training Act of 1962, the Secretary of Labor is required to establish techniques and methods for detecting in advance the potential manpower impact of automation, technological progress, and other changes in the structure of production. This type of early warning system could be of great assistance to management and union leaders, educators, government officials, economists, and others in planning programs to cushion the impact of change.

Electronic computers afford opportunities for impressive advances in productivity in clerical work. Computers are being adopted on an increasingly wider scale in industry and business. The future outlook for office employment in many parts of the economy is likely to be affected significantly by this innovation. This bulletin deals with the impact of electronic computers in insurance, a major white-collar industry which pioneered in the application of office automation.

The study covers the extent and pace of office automation over 1954-63, probable developments, and their implication for employment and occupational requirements. The chief sources of information for this bulletin were two mail surveys in 1963, covering over 400 companies having nearly 90 percent of the industry's employment. The Bureau of Labor Statistics is grateful to the many insurance company and industry association officials who assisted in the planning of the study. The cooperation of the several hundred insurance companies which participated in the mail surveys is deeply appreciated.

The report was prepared by Audrey Freedman, with some assistance by J. Stephen Keyes and Mable Elliott, under the supervision of Herman M. Sturm. The study was made in the Bureau's Division of Technological Studies under the direction of Edgar Weinberg, Chief, as part of the Bureau's research program on productivity and technological developments under the general direction of Leon Greenberg, Assistant Commissioner.

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IMPACT OF OFFICE AUTOMATION IN THE INSURANCE INDUSTRY

Chapter 1. Introduction, Summary, and Highlights

Insurance companies were among the first business firms to use electronic computers. Several of the companies began in the early 1950's to study the possibilities of computers. A few insurance companies installed computers in 1954. Within the next 10 years, companies in all branches of the insurance industry adopted electronic data processing (EDP) and applied it to various functions and operations.

Employment in Insurance Industry

As an employer, the insurance industry ranks among the largest in the United States. In 1964, the number of employees of insurance carriers averaged 884,700. Operations of "Insurance Carriers" (SIC 63) include activities in home offices and field establishments of companies that underwrite various types of insurance, providing guarantees of financial protection against specified risks or loss to life and property. Allied to "Insurance Carriers" are "Insurance Agents, Brokers and Service Organizations" (SIC 64), employing about 225,000 persons in insurance sales activities performed by independent contractors (or their employees) who deal with or represent insurance carriers.

Insurance carriers, for the purpose of this study, were classified into three groups: life insurance carriers, the largest group, which employed about 470,000 in 1964, or more than half of all insurance company employees; property insurance carriers, handling fire, marine, and casualty insurance, surety insurance, and title insurance, all of which employed a total of over 350,000 employees; and accident and health insurance carriers, which employed the remainder. (This latter type of protection is referred to in this study as "health insurance," to avoid confusion of strictly personal disability risk coverage with automobile accident coverage, included under casualty insurance.)

About 70 to 75 percent of all employees in insurance carriers are engaged in office work; the rest, in sales, custodial or similar work. Office work involves a wide range of skills, from those required for routine recordkeeping, typing, and office machine operation to those necessary for complex actuarial and statistical work, management, and claims investigation. Nearly half of all insurance carrier employees are women, most of whom work as typists, clerks, office machine operators, and bookkeepers.

Growth and Changes in Insurance Industry

Insurance carriers over the 1954-64 decade experienced a substantial increase in business. Concomitantly, total employment rose approximately 32 percent between 1954 and 1964, most of the increase occuring in the first 5 years. This rise was significantly greater than employment gains in the nonfarm sector as a whole.

Rising population, growth of personal income, and increasing complexity of legal and economic relationships have contributed to an increasing demand for insurance. The increasing numbers of families and higher family incomes have generated demand for personal insurance against risks of death and disability. Spread of home and automobile ownership and financing, along with many other factors, have stimulated a rise in the volume of property insurance. Purchase of insurance by business enterprises has risen greatly.

Fundamental changes in industry organization have taken place since 1945. Less than 20 years ago, State regulations strictly limited the types of insurance a single company could sell. Now, all types of nonlife insurance can be sold by one carrier, which may affiliate with a life carrier to sell "all lines." When State regulations were changed a decade ago, consolidations and mergers followed and former single line companies diversified.

Marketing of insurance has also been modified. For example, packaging and simplification of coverages (risks) into a single comprehensive policy, such as the fast-growing "homeowners" policy, eliminates coverage overlap for consumers, increases selling efficiency, and reduces office servicing costs. In addition, a wide variety of new coverages--from dental care to nuclear accident--are being introduced. A variety of advertising media are now used to reach a mass market and direct selling to consumers is done by some carriers. Finally, sales on a standardized group contract basis have added millions of policy certificates without the necessity to "sell" each individual covered.

As companies increased their scale of activities, office operations were rationalized and the feasibility of computer application was established. In turn, the potential benefits and efficiencies of an integrated data-processing system may have encouraged some marketing and structural changes. For example, a company can now sell life, automobile, and homeowner's coverage through a single agent, charge the policyholder on a single bill, process claims and loans, and pay dividends using only a single basic record.

Scope, Method and Limitations

This study deals with the extent and pace of the adoption of electronic data-processing technology among insurance carriers, and with its effects on insurance office employees. Electronic data processing encompasses

extremely high speed, automatic manipulation of information by computers, and a variety of auxiliary equipment--"input" devices, which accept, translate, and transfer information into the computer; and "output" devices, to adapt the computer's product to office use--usually by printing it.

This study does not cover the impact of the use of mechanical or electrical office equipment, such as electric accounting machinery or punch-card tabulating equipment, which have long been used in insurance offices, or such machines as copiers, centralized dictation systems, mailing, and checkwriting devices.

Since sales agents, custodial, and related employees are not directly affected by the spread of EDP, they were not covered by this study. The focus of the report is on office employees.

Method of Data Collection. The principal source of information for the study was a mail survey conducted in two stages. First, in the spring of 1963, questionnaires were mailed to every insurance carrier having an establishment with 250 employees or more, and to 150 smaller firms. A total of 410 firms was solicited, representing about 89 percent of all insurance carrier employment. The response to this questionnaire provided summary information on firms with EDP for use as "screening data" in planning the second stage. Thus, the second mailing, in late 1963, covered only the firms that reported they were using computers or had them on order--305 in number. This questionnaire requested detailed information, and had a slightly lower response than the first. (Further information on the methods and limitation of these surveys is provided in appendix A.)

Additional detailed data on the spread and use of EDP in the insurance industry and some of its implications were collected through interviews with industry authorities, both before and after the mail surveys. Among those interviewed were executives of 13 large and middle-size insurance companies that accounted for about 20 percent of all insurance carrier employment. In addition, pertinent reports about insurance EDP, appearing in trade publications and other published sources, were analyzed.

Limitations of the Study. Some limitations of this study should be observed. Some important manpower aspects of the impact of EDP could not readily be studied by means of mail questionnaires. For example, detailed information was not collected on employee adjustment to the changeover; the procedures adopted to facilitate the introduction; or the psychological reactions of individual employees to change. Such subjects are more adequately investigated through the intensive personal interviews that are generally conducted in case studies. Some of these case studies are listed in appendix B.

Because of the complexity and difficulty in defining the output of this service industry, it was not feasible in the course of this study to collect quantitative data that would be adequate for the measurement of industry and company production, and productivity trends. The discussion of these topics

in this bulletin, therefore, is highly tentative. Further research will be necessary to develop more definitive information on these aspects of technological change in the insurance industry.

Summary and Highlights

Use of computers in insurance is widespread. By early 1963, about 10 years after computers were first introduced in private industry, insurance companies accounting for 80 percent of total insurance carrier employment had installed computers; those accounting for another 5 percent of employment had ordered EDP or were using computer service bureaus. The numerous small companies which, together, accounted for less than 15 percent of all industry employment were not using EDP, but a substantial proportion of these companies had plans to install computers by 1968. An estimate for the entire industry indicates that about 800 computers were operating in about 300 insurance companies in 1963.

EDP applications are extensive; trend is toward an integrated, computer-centered system. Computer applications include most major insurance office operations that are done on a volume basis; primarily premium billing and accounting, commission accounting, and related recordkeeping. A developing trend is the consolidation of individual applications into one record-keeping flow, in which a single basic policy record can be used--inside the computer--to accomplish all major insurance tasks. About one-third of the companies surveyed were already using this type of consolidated records system.

Automation of input, and the use of data transmission networks, will grow. Automatic translation of source documents (such as premium notices, or policy applications) to punchcards or tape will continue to grow. At the time of this study, optical readers were already being used to reduce the amount of manual keypunching in 8 companies; these machines were expected to be installed in another 32 companies. Several other techniques for reducing input preparation (among them: magnetic ink encoding equipment, mark-sensing automatic punchers, and the use of turnaround punchcards) had been used by a number of companies.

Data transmission by telephone and telegraph lines, enabling field offices to transmit a large volume of information rapidly to the home office computer, was in operation in 18 companies; 29 others had plans to install these systems. They have the effect of reducing files and recordkeeping in field and branch offices, decentralizing, and speeding service and collection of premiums.

Computer units in responding companies employed about 15,000 persons; but EDP units represented only a small proportion of total office staff. Employment in computer units soared from about 600 in 1954 to about 15,000 by 1963. EDP employees, however, represented only about 4 percent of total office staff in computerized companies. New jobs, such as those of the systems

analyst and programer, computer and peripheral equipment operator, comprised over a third of EDP staff. Keypunch operators comprise nearly two-fifths, and other clerical workers one-fifth of EDP employees. Most women in EDP units worked as keypunch operators or in clerical jobs; a small proportion were programers.

Over 70 percent of the EDP employees were recruited from inside the company. Ninety percent of the console operators and EDP supervisors and 80 percent of the clerks, secretaries, and peripheral equipment operators were recruited from within.

Some console and peripheral equipment operators, and occasionally keypunch operators were employed for evening or night work, particularly in large companies with extensive EDP installations. Other office workers were rarely employed on shift work.

Survey results indicate that the growth rate of office staff declines in computerized companies. After the initial conversion to EDP was completed, the annual rate of growth in office employment in surveyed companies declined from 4.2 percent to 2.4 percent a year. Those responding companies which had more recently installed computers experienced a constant rate of increase in office employment. The comparison indicates that after an initial adjustment period (and perhaps after attrition has begun to affect growth), EDP begins to break the rapid growth in office staff otherwise experienced by many insurance companies.

EDP jobs were expected to increase, while a substantial proportion of companies expected no increase in general clerical workers. More than half of the responding companies indicated in 1963 that they expected planning and programing and EDP machine operation jobs to rise by 1966; most of the rest expected no change. On the other hand, general clerical groups, who comprised nearly two-thirds of all employees, were expected to decline in about 26 percent of the companies; to remain the same in 28 percent. Subsequent information suggests that these trends are probably valid for the 1966-70 period.

Keypunch operators were expected to decline in companies with optical scanners. Companies with optical scanners or plans to install them, anticipated some decline among keypunch operators. Completed EDP conversions and the use of other automatic input equipment, as well as turnaround punchcards, were also expected to reduce card punching. About half of all surveyed companies expected a decline or no change, in this occupation.

EDP reduced employment of punchcard tabulating machine operators, calculators, and routine clerical recordkeeping employees. About seven-tenths of responding computer installations reported a decrease in employment of tabulating-machine operators when operations were consolidated within the EDP system, eliminating many machine tabulation units, often scattered throughout the company. Routine clerical recordkeeping declined in

two-thirds of the companies, where file maintenance--including checking, transcribing, sorting, and searching--is now automatically done by computers. Employment of calculating-machine operators decreased in slightly more than half the offices, as the computers assumed their function.

Slowdown in growth may reduce office opportunities for new job seekers. Survey and interview results indicate that insurance offices may not continue to provide a substantial number of openings for young women high school graduates each year. In communities where this type of work has been relied on for a large and steady source of openings, employment counselors may have to consider other types of jobs in order to place succeeding high school classes.

Adjustment of the office work force may require more planning in the future. Until recently, the high rate of attrition among large clerical staffs, combined with continued growth in office work force requirements, permitted insurance companies to adjust workers to the new technology through retraining and attrition. Such adjustments are becoming more difficult, as the EDP system reaches further into all departments of the company, and as branch and field office workloads are decreased or altered in worker skill requirements.

Office employment will probably increase only 5 to 10 percent over the next decade (1965-75). EDP will have an increasing impact on unit labor requirements as the "total system," into which all major office operations have been integrated, evolves out of current computer applications. The sales component, however, will not be greatly affected by EDP, and is expected to grow with increasing business. Total insurance carrier employment will not rise as fast during 1965-75 as it did during 1954-64.

Chapter 2. Extent and Pace of Office Automation

By 1963, practically all large and medium size insurance carriers had acquired electronic computer installations. The few who had not were either awaiting installation of equipment that had been ordered or were using the services of firms that offer their EDP installations for hire on a time basis. During recent years, insurance carriers have responded to the development of improved computers by replacing or supplementing early models of equipment with new models. Beyond a count of the number of computers installed, the extent to which major insurance office functions have been converted to EDP indicates how rapidly this new technology has been applied—and what tasks the coming "total system" EDP will encompass.

Extent of Computer Use

On the basis of responses to the first screening survey, covering 410 companies with 89 percent of total insurance industry employment, it is estimated that for the industry as a whole, about 800 computers were installed (or scheduled for installation) in 300 insurance companies, accounting for nearly nine-tenths of all industry employment in January 1963.

By March 1963, 253 of the responding companies had computers (table 1). These companies accounted for nine-tenths of all employment covered by the survey, and 94 percent of all office employment represented by surveyed companies. Another 25 companies, representing about 2 percent of all office employment covered in the survey, were awaiting delivery of their first computers, already on order. About as many companies, reporting a similar proportion of employment, were using computer time rented from EDP service bureaus. The remaining 105 companies in this screening survey had less than 3 percent of all office employment reported. Among these small carriers, computer plans were being made by 30 companies.

The distribution of companies by size of computer is shown in table 2. In general, the larger companies were using the large computers; smaller firms, computers of lower capacities.

Table 2. Size of Largest Computer Operating, by Size of Company, Late 1963

Companies with office employment of--	Total	Percent of companies with--		
		Large computer	Medium computer	Small computer
1-499	100.0	8.6	11.4	80.0
500-1,499	100.0	21.7	32.5	45.8
1,500 and over	100.0	62.3	24.5	13.2

Table 1. Extent of Computerization Among 410 Insurance Companies, March 1963

Item	All companies			Companies with computers			Companies with computers on order as of March 1963			Companies renting computer time from service bureaus only			Companies planning to install computers before 1968			Companies with no computer plans		
	Number	Office employees[1]		Number	Office employees[1]		Number	Office employees[1]		Number	Office employees[1]		Number	Office employees[1]		Number	Office employees[1]	
		Number (thousands)	Percent		Number (thousands)	Percent		Number (thousands)	Percent		Number (thousands)	Percent		Number (thousands)	Percent		Number (thousands)	Percent
All companies ---	410	484.0	100.0	253	454.9	94.0	25	9.1	1.9	27	9.0	1.9	30	4.6	1.0	75	6.4	1.3
Life ---	181	184.1	100.0	101	175.2	95.2	12	3.5	1.9	14	1.0	.5	19	2.2	1.2	35	2.1	1.1
Health ---	36	24.1	100.0	32	22.6	93.5	1	.6	2.4	2	.7	2.7	1	.3	1.3	--	--	--
Property ---	193	275.7	100.0	120	257.1	93.2	12	5.0	1.8	11	7.3	2.7	10	2.0	.7	40	4.3	1.6

[1] Employment data are for the pay period ending nearest Jan. 15, 1963.

Note: Because of rounding, sums of individual items may not equal 100.0. Percentages calculated from unrounded data.

Pace of Introduction

Detailed information about the pace of computer introduction is available only for those companies which responded to the second questionnaire: 206 companies which already had installed computers, 20 companies which were awaiting delivery of their first machine, and another 20 companies which were renting computer time from service bureaus. Information in the remainder of this bulletin is based on these responses; the data are not inflated to cover companies that answered only the brief screening questionnaire.

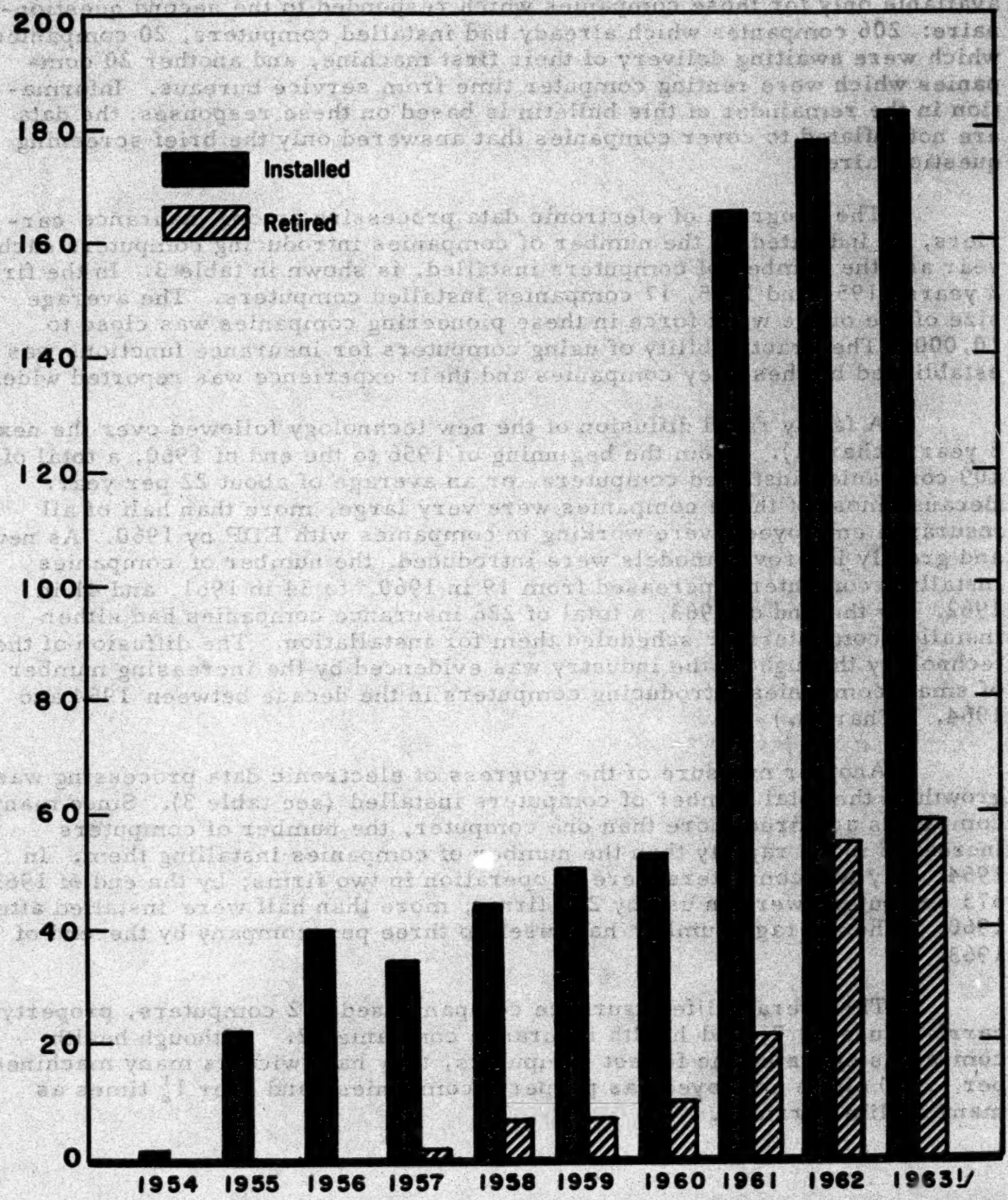
The progress of electronic data processing among insurance carriers, as indicated by the number of companies introducing computers each year and the number of computers installed, is shown in table 3. In the first 2 years, 1954 and 1955, 17 companies installed computers. The average size of the office work force in these pioneering companies was close to 10,000. The practicability of using computers for insurance functions was established by these key companies and their experience was reported widely.

A fairly rapid diffusion of the new technology followed over the next 8 years (chart 1). From the beginning of 1956 to the end of 1960, a total of 109 companies installed computers, or an average of about 22 per year. Because most of these companies were very large, more than half of all insurance employees were working in companies with EDP by 1960. As new and greatly improved models were introduced, the number of companies installing computers increased from 19 in 1960, to 34 in 1961, and 41 in 1962. By the end of 1963, a total of 226 insurance companies had either installed computers or scheduled them for installation. The diffusion of the technology throughout the industry was evidenced by the increasing number of small companies introducing computers in the decade between 1954 and 1964. (Chart 2.)

Another measure of the progress of electronic data processing was growth in the total number of computers installed (see table 3). Since many companies acquired more than one computer, the number of computers increased more rapidly than the number of companies installing them. In 1954, only two computers were in operation in two firms; by the end of 1963, 673 computers were in use by 226 firms; more than half were installed after 1960. The average number had risen to three per company by the end of 1963.

The average life insurance company used 3.2 computers, property carriers used 2.7, and health insurance companies 2. Although health companies operated the fewest computers, they had twice as many machines per 1,000 office employees as property companies, and over 1½ times as many as life carriers.

Chart 1. COMPUTERS INSTALLED AND RETIRED, 226 INSURANCE COMPANIES, ANNUALLY 1954-63



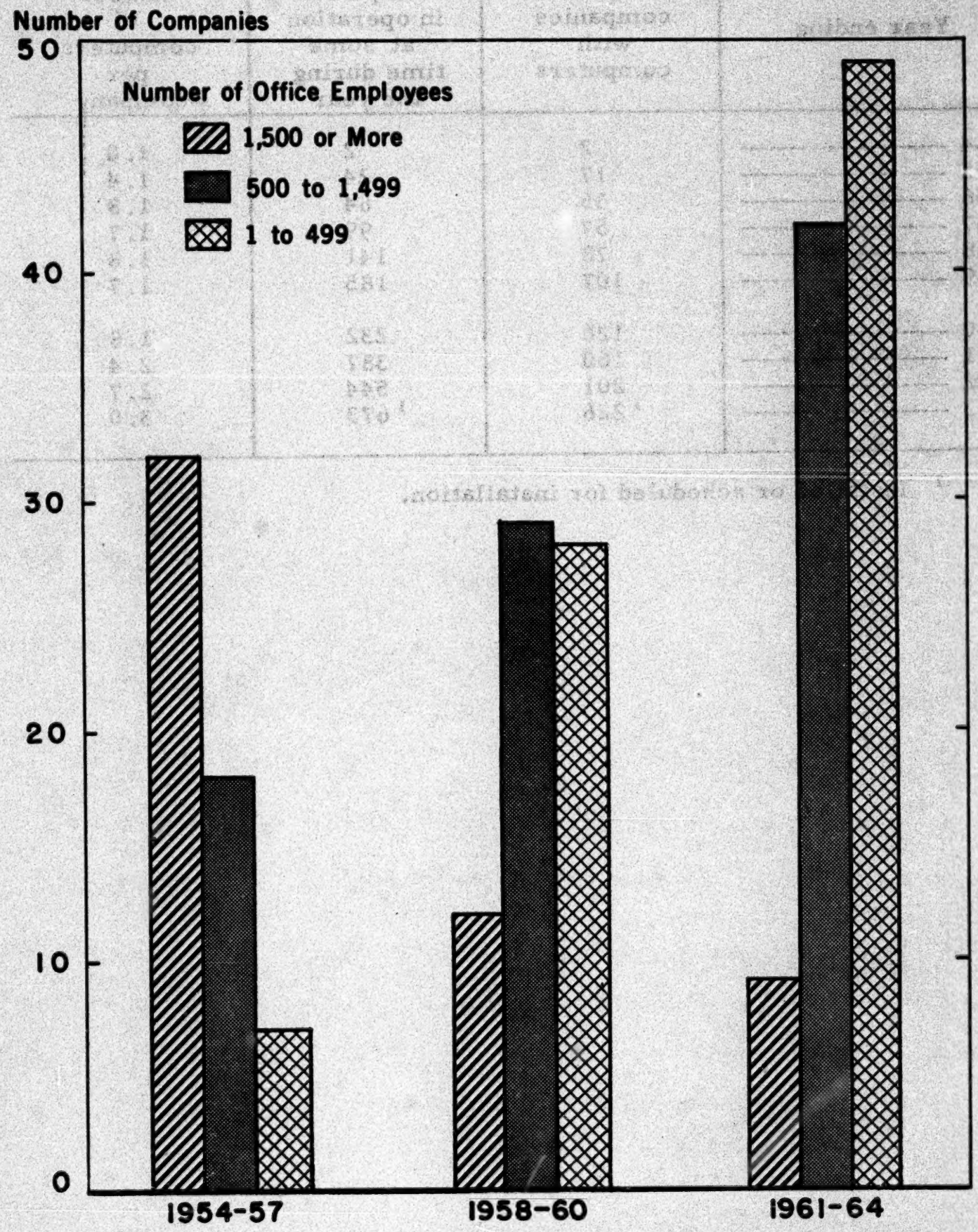
1/ In 1963 includes installed and on order.

Table 3. Number of Responding Companies with Computers and Total Number of Computers in Operation, by Year, 1954-63

Year ending	Number of companies with computers	Number of computers in operation at some time during the year	Average number of computers per company
1954	2	2	1.0
1955	17	24	1.4
1956	35	64	1.8
1957	57	99	1.7
1958	78	141	1.8
1959	107	185	1.7
1960	126	232	1.8
1961	160	387	2.4
1962	201	544	2.7
1963	[1] 226	[1] 673	3.0

[1] Installed or scheduled for installation.

Chart 2. INSURANCE COMPANIES ACQUIRING THEIR FIRST COMPUTERS, BY SIZE OF OFFICE EMPLOYMENT, FOR SPECIFIED PERIODS, 1954 to 1964



Of the computers operating in responding companies during 1963, about 100 were in companies operating only one machine; most of the rest were functioning as parts of multicomputer systems in home offices of the larger companies. Only nine respondents, all large life or property carriers with home office computers, reported additional computers in field offices. One company, however, reported as many as 28 field computers installed or scheduled for installation.

Although these figures generally measure the rapid diffusion of electronic data processing, they do not fully indicate the sharp growth in computing capacity. An important trend, beginning in 1957 and accelerating after 1960, was the replacement of previously installed computers with more recent improved models. At first, larger capacity computers were adopted to replace smaller models. After 1960, many companies replaced their computers with vastly improved "second generation" machines. These later models incorporated transistors in place of vacuum tubes, and had memory capacities and tape speeds many times higher than previous computers. In some instances, they were available at lower rental or purchase prices than had been charged for earlier models of smaller capacity.

Looking ahead, a wave of replacement of "second generation" computers may be anticipated over the next few years. New models of computers, now being placed on the market, utilize microelectronic circuits and have memory capacity and speeds many times those of the transistorized generation. The cost and time needed to reprogram for the new computer systems will be important factors affecting the extent and pace of replacement of older models.

Utilization of Computers

In assessing the pace of introducing electronic data processing, the extent to which computers are applied to different work functions within insurance companies is important. Only a small part of the data-processing workload susceptible to computerization is affected at the outset of a changeover. Each computer application requires extensive analysis of existing procedures, development and testing of programs, and the retraining of employees.

To determine more precisely how intensively electronic data processing was utilized, each company was asked to indicate which of 22 different data-processing operations were handled by a computer, and which would be computerized over the next few years. The results suggested that insurance companies were steadily extending the application of computers, but that full use of the computer's potential was still in the future. The median number of applications in 1963 was nine (table 4).

Such a count of applications, however, is greatly affected by the number of companies which either do not perform some functions at all, or

Table 4. Number of Computer Applications, 206 Companies, 1963

Number of applications	Total number of companies
None reported	5
1	3
2	8
3	4
4	10
5	15
6	7
7	17
8	17
9	25
10	23
11	17
12	13
13	11
14	12
15	7
16-22	12

which have such a low volume in some functions that computerization would not be worth the expense of programing and conversion. For example, some companies rely on brokerage firms for sales and therefore would not have such applications as policyholder billing or commission accounting for each agent. Mutual companies would not ordinarily have stockholder files, nor would most stock companies process policyholder dividends. Accordingly, the extent of utilization of computers may have been somewhat understated.

Charts 3 and 4 show the extent to which EDP was applied in each of the 22 different functions by 86 life companies and 93 property companies that reported on computer applications. The types of applications differ between life and property carriers. In both types, however, 8 of the 22 work functions were computerized by more than half of the companies by the end of 1963. Computers were also being applied for all other listed functions by some companies, but not as widely.

Computer Applications by Life Insurance Companies. Among life insurance companies, the two most frequent functions to which computers were applied were premium billing and premium accounting--tasks which formerly required large numbers of clerks handling files involving from a few hundred thousand to tens of millions of policies. These large volume tasks, typically centralized at the home office, were particularly adaptable to the computer's tremendous speed of calculation and printing. Besides labor savings, intangible considerations of better management control over this massive task, faster collections, and improved customer service were probably factors in introducing computers in these operations.

Since the calculation of agents' commissions (based on types and sizes of policies sold) is closely related to the same policy record from which premium bills are derived, commission accounting was also among the most frequent functions for which computers were used by life carriers. Information on commissions earned is a "by product" of the billing operation. Many life companies planned to extend electronic data processing to two interrelated functions: Policy issue and policy loan accounting, which are within the same basic record flow.

Besides applying computers to recordkeeping tasks, involving massive, day-to-day workloads, some life carriers were utilizing computers in product development--the construction of new coverages, packages, or rates which might expand their markets. Actuarial analyses and mortality or morbidity studies are essential for this purpose. In some of these applications, computers afford actuaries and statisticians the opportunity to perform calculations hitherto not economically feasible.

The gradual step-by-step extension of electronic data processing within an organization is illustrated by the experience of a large life

Chart 3. COMPUTER APPLICATIONS, LIFE INSURANCE CARRIERS, 1963

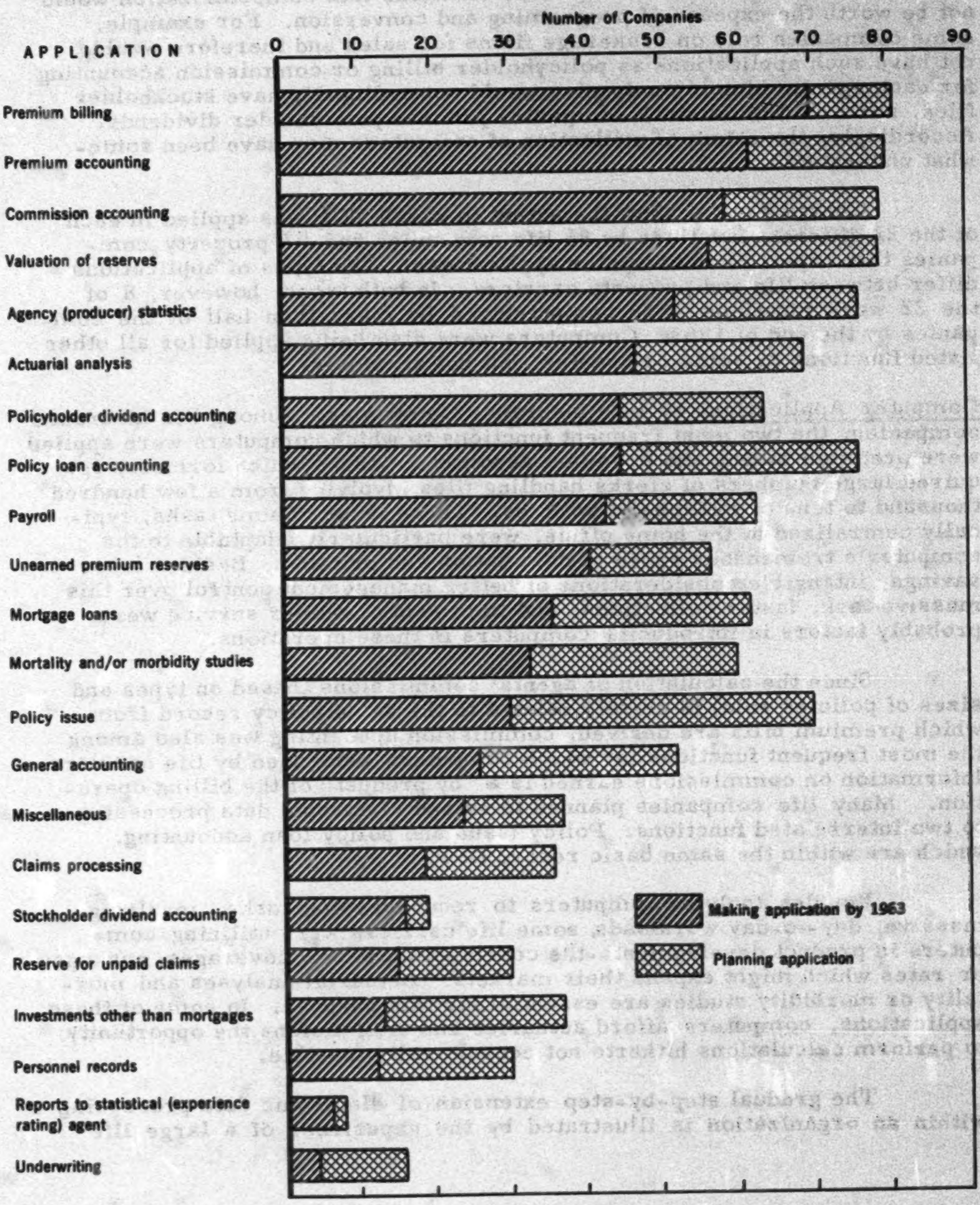
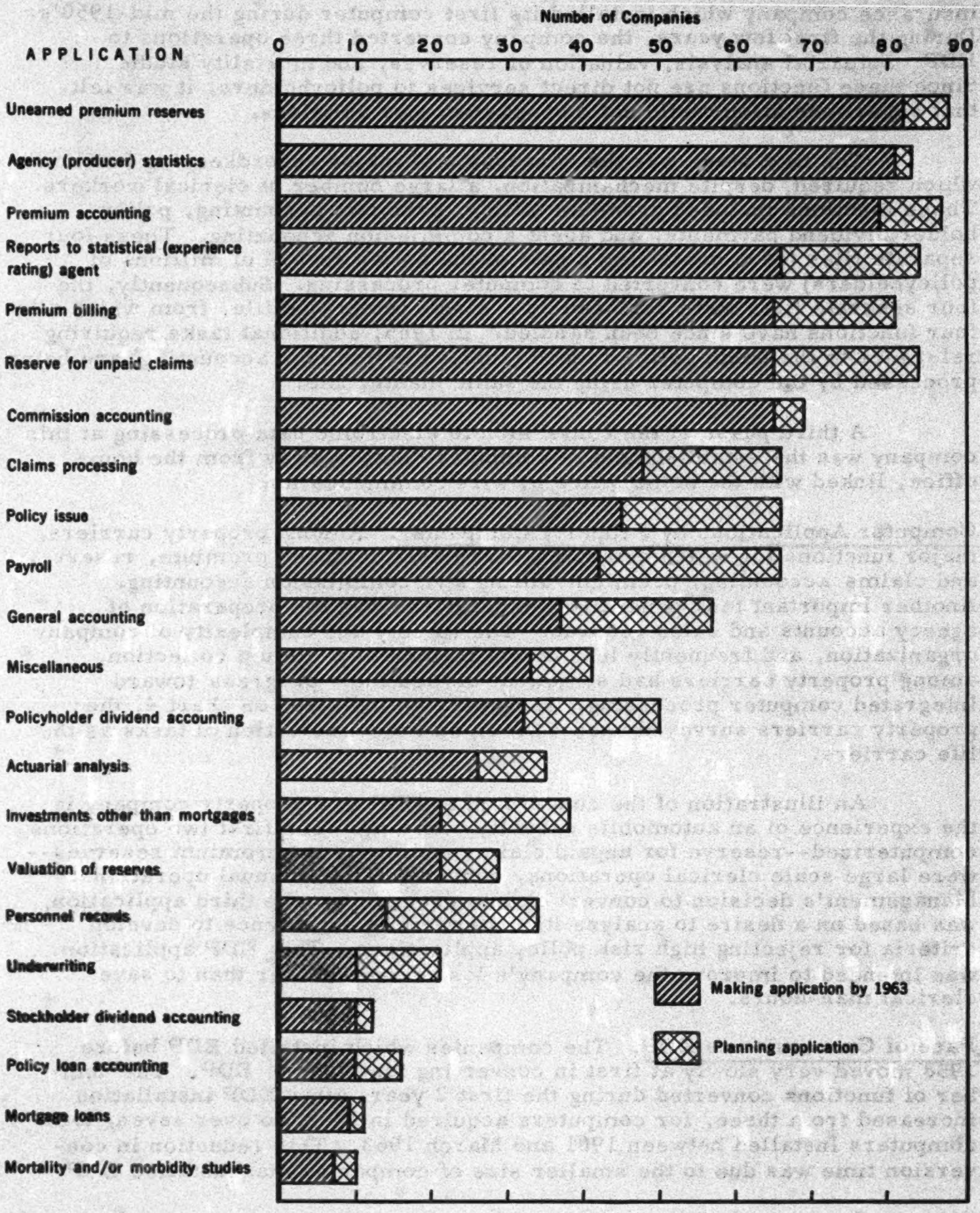


Chart 4. COMPUTER APPLICATIONS, PROPERTY INSURANCE CARRIERS, 1963



insurance company which installed its first computer during the mid-1950's. During the first few years, the company converted three operations to EDP: actuarial analysis, valuation of reserves, and mortality studies. Since these functions are not direct services to policyholders, it was felt that experimentation would not disrupt customer relations.

The next stage was the conversion of major recordkeeping functions which required, despite mechanization, a large number of clerical workers. These functions included premium billing, premium accounting, policyholder dividend payments, and agent's commission accounting. These four separate files (each containing a part of the policy record of millions of policyholders) were converted to computer processing. Subsequently, the four separate files were replaced by a single integrated file, from which all four functions have since been handled. In 1965, additional tasks requiring reference to the basic policy record (such as policy loan accounting) are being processed by the computer using the same master file.

A third phase of the conversion to electronic data processing at this company was the establishment of computer centers away from the home office, linked with the home office by wire communication.

Computer Applications by Property Companies. Among property carriers, major functions for which computers were used included premium, reserve, and claims accounting, premium billing and commission accounting. Another important task generally computerized was the preparation of agency accounts and sales records. The variety and complexity of company organization, and frequently less direct method of premium collection, among property carriers had somewhat slowed their progress toward integrated computer processing. However, as indicated on chart 4, the property carriers surveyed used EDP on as wide a selection of tasks as the life carriers.

An illustration of the conversion to EDP at a property company is the experience of an automobile casualty company. The first two operations computerized--reserve for unpaid claims and unearned premium reserves--were large scale clerical operations, converted from manual operations. Management's decision to convert claims processing, the third application, was based on a desire to analyze its underwriting experience to develop criteria for rejecting high risk policy applications. This EDP application was intended to improve the company's loss record rather than to save clerical man-hours.

Pace of Conversion to EDP. The companies which installed EDP before 1958 moved very slowly at first in converting functions to EDP. The number of functions converted during the first 2 years after EDP installation increased from three, for computers acquired in 1955, to over seven, for computers installed between 1961 and March 1963. This reduction in conversion time was due to the smaller size of companies that installed EDP

in later years; the fact that pioneering EDP companies shared their experiences with others; improved programing methods and better EDP equipment; consultant help in programing and systems analysis, which computer manufacturers and management services firms had begun to provide; and increased familiarity with EDP on the part of company management and employees.

Chapter 3. Developments and Outlook in Office Automation

With electronic data processing virtually universally installed, technical advances in the insurance industry are expected to maximize efficiency in the utilization of computer capacity. One advance will be in greater automation of input through optical scanners; a second is the automation of information transmission, while a third, and perhaps most important, is consolidation of functions and files into a "total system."

Greater use of Optical Scanners

Optical scanners--electronic devices which "read" code symbols (bars or dots), alphabetic, or numerical characters--provide a means of saving clerical labor in preparing data for electronic data processing. As of mid-1963, only 8 companies had installed equipment but 9 had ordered and 23 definitely planned to order this equipment. These 40 companies employed about 27 percent of the office employment in 226 companies that had, or had ordered computers. More important, they employed over 2,000 keypunch operators.

The optical scanner affords opportunities for eliminating a substantial volume of document transcription done by keypunch operators. The eight companies that had installed optical scanners were using them primarily for recording premium payments. In this application, the computers print premium bills on a "turnaround form"--a form designed to notify the policyholder of the amount due, after which it is returned by the policyholder when he remits the payment. The form, when returned to the company, is processed through the optical scanner which "reads" the amount due and policy identification material, and transfers the information to cards or tape to be fed into the computer to make the appropriate accounting entries.

In two companies which had optical scanning equipment, about 10,000 premium collection stubs were scanned each day. The keypunch and verifier operators were no longer needed. Only two operators, having about the same skills as keypunch operators, were needed on the optical scanner, chiefly to process rejects and initiate machine runs.

Use of Pre-authorized Check Plans

A development which reduces the amount of premium billing work is the pre-authorized check plan. This technique allows the carrier, when authorized by a policyholder, to draw a check on the policyholder's bank account to pay premiums as they fall due, often once a month. In order to facilitate bank handling of these checks, insurance companies may "encode," or print the checks, with magnetic ink characters that are readable by bank sorting machines. A total of 16 companies--15 life and 1 health--were using magnetic ink encoding equipment in this way in 1963. Two more companies

Optical scanners coupled with data transmission facilities enable one insurance carrier to update, in its home office computer, premium records from hundreds of its field offices overnight.

had ordered, and six had definite plans to order this equipment. Apart from its use in collection and banking of premiums, magnetic ink equipment has limited potential in insurance carriers.

Mark Sensing Equipment

Fourteen companies utilized mark sensing machines to reduce input preparation. These devices automatically punch cards on which marks have been made by a pencil with a special type of lead. Four companies had ordered such devices and five definitely planned to order. These 23 companies had 16 percent of the office employment in the 226 companies that had installed or ordered computers.

Mark sense cards are used by agency offices to make inquiries on policy status from the computer files, or to make changes automatically in policy records kept on tape or punched card files in the home office. An agent or other field employee marks a card and sends it to the home office. Mark sensing equipment automatically punches the marks, creating a punch-card which can then be machine translated into magnetic tape. Marked cards can thus eliminate a typed business letter, or some other manually produced form of inquiry which would require a coding clerk and a keypunch operator for translation to computer-usable form.

Mark sensing equipment may eventually be supplanted by mark reading equipment. In such a case, an ordinary pencil could be used to mark cards, which could then be read to produce either card or tape inquiries or change orders to the computer.

Extension of Data Transmission Systems

Data transmission equipment for sending information over telephone or telegraph circuits in conjunction with electronic data processing are expected to have a profound impact on the distribution of records, workload, and employment between field and home offices. Eighteen companies had this equipment--typically large companies, with long experience in EDP and several large computers. Six companies had ordered and 23 others definitely planned to order such systems. These 47 companies had 206,000 employees, or about 52 percent of office employment in 226 companies that had installed or ordered computers.

Data transmission systems provide a means of rapid interchange of information between outlying branch offices and the home office computer center. For example, branch offices of property companies may collect premiums, deposit them in local banks, and transmit information to the home office to indicate which policies are paid, and the amount deposited. Home office computers may then use these data to update their master accounts and policy records. Field offices which have the power to settle claims may use the transmission system to communicate the authorized claim amount to the home office, where a check is mailed through the EDP accounting procedure.

In health insurance companies, field offices use data transmission systems to ask the home offices whether a particular patient is a policyholder, and to what type of plan he has subscribed.

Data transmission systems, still in an early stage of use, may result in significant economies of time and labor. Before 1970, companies may be using "real time" systems in which data transmission and fast random access computer memories would handle each inquiry or transaction from a large network of field stations as fast as the inquiry occurs. Rapid access to the home office computer would substantially reduce field office processing and records.

Trends Toward Consolidation and Reorganization

One of the most significant developments accompanying the introduction of EDP is the trend toward consolidation of many separate files and records into a few master files. In 1963, of 226 companies that had installed computers, 66 companies accounting for 46 percent of office employment, had consolidated EDP systems, in which major functions were processed by the computer through one basic file. Few of these systems, however, had reached their fullest potential of consolidation; about half of these were in life companies, a third in property companies, and a sixth in health companies.

Before EDP, separate operating departments maintained separate sets of files for such functions as billing, loan accounting, dividend accounting, claims, and agents commissions. One company reported that it had employed a substantial number of clerks to maintain and update 14 separate files--each containing some fragment of information about a single policy--distributed among agents; branch offices; and actuarial, loan, dividend, disability claim, and legal departments. A change in the policy often meant changing some items in each of these 14 files, with the attendant possibility of errors. However, this was considered an effective way to maintain administrative control over the large numbers of persons and the mass of work involved. Minimum, limited training also mitigated the effects of high turnover among the female high school graduates who worked only a few years.

As records and operations are consolidated into the EDP system, functions which once required the cooperation of three departments (such as premium billing, where loan and dividend files were also necessary to calculate the bills) are carried through all steps and reconciliation is handled inside the computer. Bulky card files are eliminated, tabulating equipment is retired, fewer controls and audits are required, fewer first-line supervisors are needed. A major result of consolidation will be reduction in the number of clerks.

The effects of a consolidated system on employees of one large life insurance company is described by an official:

> As information became available in complete form in the home office, rather than in the former segmented form with loan, dividend, values, and premium data in different departments, the limited specialist clerks disappeared. So too did many of the old concept work supervisors disappear as the larger repetitive clerical work staff disappeared. In their place came personnel trained and familiar with a full package of information about the policy . . . . The most dramatic change in field operations occurred with the centralization of the money flow processes of premium and other collections and with it, of course, all related accounting and service requests . . . . Thus much record reference and posting activity was eliminated in the field office . . . . Typing activity too disappeared in considerable measure as reports became unnecessary . . . .
>
> The impact of the computer processes on field office through eliminating volume transactions and reducing junior staff, while making more sophisticated tools and information directly available to the agency and agent has materially reduced the role of the field office staff to that of a relay station except for that role performed only by competent seniors with service skills and insurance understanding. [1]

A casualty company official describes the systems in his branch of the industry:

> The procedures we build now can help us to reach an eventual consolidated system in which all information pertaining to a single policyholder--from preliminary risk evaluation data through endorsement, revision, premium, dividend, and loss history for each type of coverage carried--all will be on one master record . . . . replacing various files needed for each policyholder even with the much improved procedures now in effect. [2]

In short, the consolidation of files into one master file, processed on the computer, may result in savings in clerical labor much greater than the introduction of the computer itself.

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[1] Richard D. Dotts, "Impact and Opportunities--Computers and Field Operations," in Proceedings of the Life Office Management Association, 1963, pp. 220-224. New York, N. Y., the Association, 1963.

[2] Raymond Deck, Senior Vice President, American Mutual Liability Insurance Company, as quoted in "Insuring Profitable Policies," by Richard D. Kornblum, Business Automation, June 1965, pp. 54-59, 70, 72.

Chapter 4. Employment in Electronic Data Processing Jobs

One of the most important results of the introduction of electronic data processing is the creation of a group of new jobs in each office to manage, program, operate the equipment, and perform the clerical tasks necessary for preparing data for the computer. The number and type of these jobs in the insurance offices surveyed, and sources of recruitment are discussed in this chapter.

Number Employed in EDP Units

An estimated total of about 15,000 persons in January 1963 were working directly with EDP in insurance carriers, contrasted with only about 600 employees in EDP units in 1954. Employment in EDP jobs constituted about 4 percent of total office employment in insurance companies surveyed in 1963. For all insurance carriers, the estimated number of EDP employees was around 19,000.

The average (mean) number of employees in EDP units was 74, but the size of the units ranged from 5 to 1,391 employees. Companies operating large computers had substantially larger EDP staffs than those using small computers only. The average EDP employment in companies operating large computers was 123; in those using small computers only, 38.

Occupational Structure of EDP Units

The work involved in electronic data processing requires employees who have a wide range of skills, ranging from routine clerical abilities to the complex skills of systems analysts. Employment, by occupational group, of over 15,000 employees working directly with EDP systems in 206 companies that had installed computers is shown in table 5 and chart 5. Although the few companies that were awaiting installation or using outside service bureaus had a few EDP employees, chiefly programers and systems analysts, they were not included in this distribution.

Planning and Programing Personnel. These key employees accounted for a little over one-fifth of all EDP employees in the 206 companies studied.[3] Included were project planners, who design organizational, procedural, and work flow plans; systems analysts, who analyze data processing problems to devise computer system requirements and develop programing procedures; and programers, who convert the analysts' statements of technical or business problems into its explicit instructions which guide the computer's actions.

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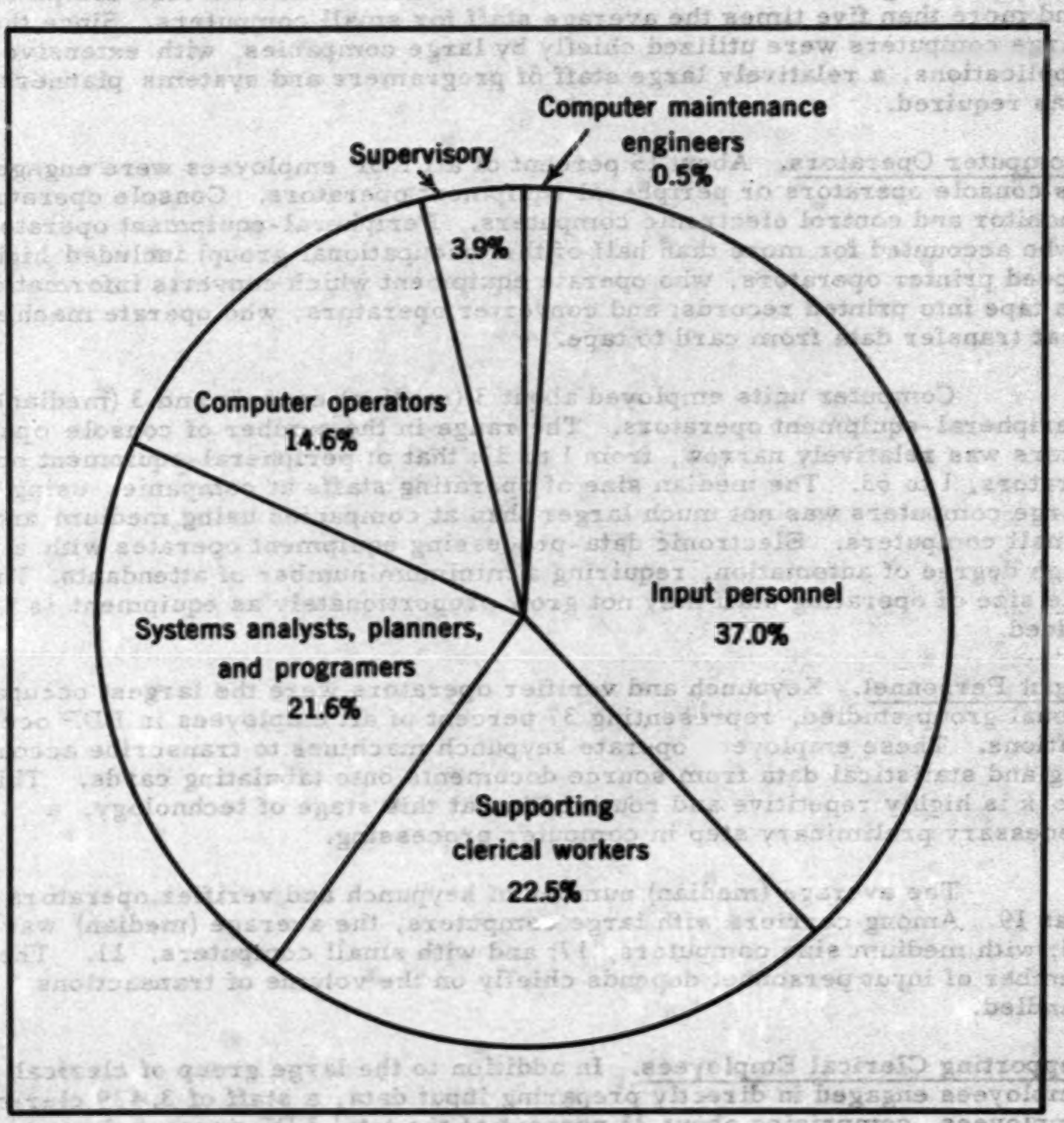
[3] For detailed descriptions of jobs in electronic data processing, see the 1965 edition of the Dictionary of Occupational Titles (U.S. Employment Service, Bureau of Employment Security, Washington, D.C.).

Table 5. Occupational Grouping of Employees Working Directly with EDP Systems in 206 Companies Operating Computers, January 1963

Occupational group	Total employment		Women	
	Number	Percent distribution	Number	Percent of total in each occupation or group
All EDP employees	15,238	100.0	9,280	60.9
Planning and programing personnel:				
Project planners, system analysts, programers	3,290	21.6	509	15.4
Computer operators	2,221	14.6	289	13.0
Console operators	1,025	6.7	106	10.3
Peripheral equipment operators	1,196	7.8	183	15.3
Input personnel (keypunch operators and verifiers)	5,631	37.0	5,599	99.4
Supporting clerical workers	3,429	22.5	2,818	82.2
Tape librarians, card and tape file clerks	382	2.5	306	80.1
Secretaries, typists, and receptionists	335	2.2	335	100.0
Coding clerks and general clerical employees	2,712	17.8	2,177	80.3
Supervisory and related managerial and professional employees	598	3.9	64	10.7
Maintenance engineers (electronics mechanics)	69	.5	1	1.4

Chart 5. OCCUPATIONAL MAKEUP OF THE EDP UNIT, 206 INSURANCE COMPANIES WITH COMPUTERS, 1963



Because of rounding, the figures in this chart do not total 100.0%

The average (median) number of employees in this occupational group in insurance carriers surveyed was eight. The total number in the group, however, ranged widely among the carriers, from 1 to 191. Offices using large computers employed an average (median) of 22 planners, analysts and programers; more than twice the staff for medium size computers and more than five times the average staff for small computers. Since the large computers were utilized chiefly by large companies, with extensive applications, a relatively large staff of programers and systems planners was required.

Computer Operators. About 15 percent of all EDP employees were engaged as console operators or peripheral-equipment operators. Console operators monitor and control electronic computers. Peripheral-equipment operators (who accounted for more than half of this occupational group) included high speed printer operators, who operate equipment which converts information on tape into printed records; and converter operators, who operate machines that transfer data from card to tape.

Computer units employed about 3 (median) console and 3 (median) peripheral-equipment operators. The range in the number of console operators was relatively narrow, from 1 to 37; that of peripheral-equipment operators, 1 to 63. The median size of operating staffs at companies using large computers was not much larger than at companies using medium and small computers. Electronic data-processing equipment operates with a high degree of automation, requiring a minimum number of attendants. Thus, the size of operating staff may not grow proportionately as equipment is added.

Input Personnel. Keypunch and verifier operators were the largest occupational group studied, representing 37 percent of all employees in EDP occupations. These employees operate keypunch machines to transcribe accounting and statistical data from source documents onto tabulating cards. This work is highly repetitive and routine, but at this stage of technology, a necessary preliminary step in computer processing.

The average (median) number of keypunch and verifier operators was 19. Among carriers with large computers, the average (median) was 31; with medium size computers, 17; and with small computers, 11. The number of input personnel depends chiefly on the volume of transactions handled.

Supporting Clerical Employees. In addition to the large group of clerical employees engaged in directly preparing input data, a staff of 3,429 clerical employees, comprising about 23 percent of the total EDP personnel, were engaged in supporting tasks. They included coding clerks, who convert information into predetermined codes for subsequent use by keypunch operators; tape librarians, who classify, catalog, and maintain a library of reels of magnetic or punched paper tapes used in electronic data processing; and a small group of scheduling clerks, secretaries, typists, and receptionists.

Demand for computer console operators and peripheral equipment operators in the insurance industry is expected to increase.

Supervisory and Related Personnel. Supervisors of electronic data processing systems and related management and professional staffs represented about 4 percent of total EDP employment. They coordinate activities of employees who operate computers and peripheral equipment. Some planning and programing personnel may have supervisory functions as well as EDP duties.

Maintenance Employees. Only six companies employed their own electronics mechanics or engineers to test and maintain EDP equipment. Most companies contracted computer maintenance to the equipment manufacturer; no estimate of the extent of maintenance employment can therefore be made.

Source of EDP Staff

The general pattern followed in filling jobs in electronic data processing was to retrain and transfer employees from other work in the insurance company. About 72 percent of employees in EDP jobs were selected from within the company. (See table 6.) This procedure utilized employees with a knowledge of the company's practices rather than of EDP. The only jobs for which most of the employees were recruited from outside the company were the few electronics mechanics positions which require special training and experience not likely to be found among previous employees of insurance companies.

Reliance on the companies' own employees was particularly marked in filling positions for systems analysts, EDP supervisors, console and peripheral-equipment operators, and supporting clerical jobs. Since most companies shifted to electronic data processing after some years of experience with punchcard tabulating systems, personnel readily adaptable to these EDP positions were probably available within the companies.

A relatively high proportion (but less than half) of programer jobs were filled by persons from outside. Also, a number of keypunch operators, a relatively low paying entry position, were recruited from the outside.

Women in EDP Jobs

Women comprised about 61 percent of all EDP employment in the 206 companies studied (table 5). Most women EDP employees--about 90 percent--were engaged as keypunch operators and in supporting clerical jobs such as tape librarians, data typists, coding, scheduling, card or tape file clerks. They represented about 93 percent of all employees in these occupational groups.

Relatively few women were employed as project planners, systems analysts, or programers, accounting for only 15 percent of the employees in these relatively higher skilled occupations. Women also represented only small proportions of the console and peripheral-equipment operators and EDP supervisory staff.

Table 6. Source of 1963 EDP Staff, by Occupation

Occupation	Percent		
	All employees	Employees selected from within the company	Employees recruited from outside
All EDP employees	100.0	71.7	28.3
System analysts	100.0	77.6	22.4
Programers	100.0	60.5	39.5
EDP supervisors	100.0	90.6	9.4
Console operators	100.0	89.6	10.4
Peripheral-equipment operators	100.0	80.5	19.5
Electronics mechanics	100.0	13.3	86.7
Keypunch operators	100.0	63.0	37.0
Tape librarians	100.0	75.7	24.3
Receptionists, secretaries	100.0	82.0	18.0
Coding, other clerks	100.0	82.1	17.9

Source: Based on returns from 35 companies, covering 7,191 EDP employees, which reported usable information.

EDP and Shift Work

A relatively high proportion of companies--55 percent--were operating their computers on a multishift basis; 85 percent of the largest companies were doing so. (See table 7.) About 25 percent were on 2 shifts; 30 percent, on 3 shifts. About 70 percent of the companies using shifts for EDP units had non EDP office workers on a day schedule only.

One factor inducing intensive use of the computer is the desire to get the maximum use of expensive equipment. Moreover, in some instances, work after regular office hours has become part of an efficient cycle of operations on certain routine functions, such as billing. For example, in a number of companies, the computer was used during evening and night shifts to perform a routine run of thousands of policies to produce premium bills. In the morning, the computer's output of bills was ready for mailing by the regular daytime office staff.

Shift work was introduced in some companies during the period of consolidating and converting records to punchcards, prior to the start up of the computer installation. This extensive job frequently required nightwork by large numbers of keypunch operators. By 1963, however, usually only the computer-equipment operators were on shift work. The console operator and one or two printer or converter operators may have made a night "run" on one or two applications. In some companies, keypunch operators may also have been on shift work. Programers, systems analysts, and supporting clerical employees, however, seldom worked on extra shifts, on a regular basis.

Table 7. EDP Shift Practices in Home Offices of Companies with Computers, by Size of Office Employment, 1963

Item	All companies		Companies with office employment of--					
			1-499		500-1,499		1,500 and over	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All companies with EDP	206	100.0	70	100.0	83	100.0	53	100.0
Companies with one EDP shift only: All	93	45.1	47	67.1	38	45.8	8	15.1
With other office workers on multi-shifts[1]	10	4.9	3	4.3	6	7.2	1	1.9
Companies with more than one EDP shift: All	113	54.9	223	32.9	45	54.2	45	84.9
Two EDP shifts	52	25.2	15	21.4	28	33.7	9	17.0
Three EDP shifts	61	29.6	8	11.4	17	20.5	36	67.9
With no other workers on shifts	79	38.3	19	27.1	36	43.4	24	45.3
With other office workers on shifts	34	16.5	4	5.7	9	10.8	21	39.6

[1] Figures for this category are not included in totals.

NOTE: Because of rounding; sums of individual items may not equal totals.

Chapter 5. Impact of EDP on Employment Trends in the Insurance Industry

In appraising the impact of electronic data processing on employment trends in the insurance industry, it is important to recognize the difficulty of isolating the complex effects of this specific technological change from those resulting from mergers and consolidations, internal reorganization, changes in types of policies sold, and other changes that occurred at the same time. Although precise measurement of the impact of EDP is not possible, several approaches to analyzing the effects are set forth.

Trends in Insurance Office Employment and Productivity

Office employment in surveyed companies increased by 32 percent between 1954 and 1963, totaling nearly 366,000 in January 1963.

In order to discern the effect of EDP on office employment growth, employment trends in companies which had computers for 5 years or more were compared with those in companies with less than 5 years of EDP experience. The 5-year period was selected as a basis for comparison because within that time, major conversions would have been completed. During the early stage of the transition to EDP, some companies found it necessary to employ additional temporary clerks for conversion operations, so that labor trends in the first 5 years would not be useful in predicting long-term results. Table 8 shows the percent change in office employment over 3-year intervals following 1954 and over the 9-year period.

Office employment in companies with 5 or more years of EDP experience increased by 31 percent over the 1954-63 period, a somewhat lower increase than for companies with shorter EDP experience. It is particularly noteworthy that the percent increase in employment in the most recent period among experienced companies is significantly smaller than among companies with less experience. Also, the percent gain declined for these experienced companies in each period after 1954-57, while it remained fairly steady for those with shorter experience.

This analysis suggests that the lower growth rate in employment for companies with long EDP experience reflects the effects of greater productivity. In other words, it was possible to handle an increasing workload without increasing employment as much as would have been necessary if EDP had not been introduced.

Another possible explanation is that the volume of business among the companies with long EDP experience--generally large carriers--did not increase relatively as much as business among the companies with short experience. Other information, however, indicates that this factor alone was not enough to cause all of the difference in employment growth between the two groups.

Table 8. Office Employment Growth in Surveyed Insurance Companies, 1954-63

Item	Surveyed companies		Percent change in office employment [1]			
	Number	Office employment January 1963	1954-57	1957-60	1960-63	1954-63
All surveyed companies [2]	207	365,911	12.2	8.2	8.4	31.5
Companies with 5 years or more of EDP experience by 1963	54	215,473	13.1	8.2	7.3	31.3
Companies with EDP experience of less than 5 years by 1963	127	136,594	10.7	10.2	10.6	35.0
Companies with EDP on order as of 1963	16	6,019	14.0	3.1	20.8	42.0
Companies using an EDP service bureau in 1963	10	7,825	9.6	-13.7	-5.5	-10.6

[1] January data used throughout table.
[2] Only companies which provided office employment data for all 4 years (1954, 1957, 1960, 1963) were included.

Although definitive quantitative data on output of the companies surveyed were not readily available, some evidence obtained in the survey points to significant increases in output per employee in various operations where EDP was applied. Officials of a number of large companies reported that EDP made it unnecessary for them to hire additional clerical employees for billing, accounting, and collection operations when the volume of business increased. One company official estimated that the computer permitted employees to process two or three times more work on a particular operation than they could on electromechanical data-processing equipment.

Meaningful quantitative data on the volume of work done before and after EDP (such as the number of premium invoices prepared), --in relation to number of man-hours or employees engaged in such operations-- were not readily available. Several companies indicated that these comparisons were difficult to make because of organizational changes, development of new types of policies requiring data processing not hitherto done, and lack of adequate records. A number of companies reported that their experience was too short to estimate the full implications of EDP on productivity.

One measure sometimes used as an indicator of the overall volume of work done by life insurance carriers is the number of policies in force. Since this is a net figure, changes in that number do not directly reflect the number of new policies and the number of cancelled policies, which presumably reflect work done. Also, group policies, which are frequently billed and otherwise handled on a mass basis and which lack many service features, must be counted as life policies even though the different forms require differing amounts of office work. Among other production items not properly accounted for in such a measure are: loans processed, annuities paid, pension plans administered, conversions and policy changes, billing frequency, and the variety of group and individual health policies also sold by life carriers.

Changes in the number of policies in force per employee are used as a rough guide to trends in efficiency, reflecting not only the effects of the introduction of electronic data processing in a limited number of operations, but also technical and organizational changes that affect the total complex of carrier operations, including some changes that increase unit labor requirements.

Table 9 shows the percent changes in policies in force, employees, and policies in force per employee for 17 life insurance companies that had acquired EDP in 1954 through 1956 and therefore had had the longest experience with EDP. The ratio of policies per employee for the group as a whole declined between 1956 and 1959 and then rose between 1959 and 1962. Employment also increased between 1959 and 1962 but not to the same extent as the number of policies in force.

Some of the 17 companies, however, did not show an increase in the ratio. The group included both large and small companies. Of the 17 carriers, 11 showed increases in the policies per employee ratio, between 1959 and 1962; 6 showed decreases. Officials of some of the large firms that showed a decline in the ratio of policies per employee, however, indicated in interviews that because of organizational changes and shifts in types of policies, figures on policies in force were not fully representative of the work output in these companies.

Table 9. Percent Change in Policies in Force, Office Employees, and Policies Per Office Employee in 17 Life Insurance Companies,[1] 1956-59 and 1959-62

Item	Percent change	
	1956-59[2]	1959-62[2]
Policies in force	+3.5	+3.7
Office employees	+6.8	+1.6
Policies per office employee	-3.1	+2.1

[1] The 17 life insurance companies employed about 98,000 office employees.

[2] December 31 data used for policies in force; succeeding January 15 data used for office employees.

Effect of EDP on Insurance Office Occupations

To assess the effect of EDP on specific occupational groupings, the companies surveyed were asked, first, about recent changes in employment of selected groups of insurance employees as a result of EDP; second, about prospective trends at the time, in employment in various occupational groups.

Recent Impact on Selected Occupations. Table 10 shows the proportion of companies indicating whether the computer resulted in employment decrease, increase, or no change, for each of five major occupational groups. A majority of companies reported declines in three occupational groups: tabulating-machine operating; routine clerical recordkeeping, and calculating machine operating jobs.

Table 10. Effect of Introducing the EDP System on Specific Occupational Groups (as of 1963)

Occupational group	All companies operating computers	Percent of companies reporting that EDP caused employment to--			Percent of companies not responding to this item
		Decrease	Remain the same	Increase	
Tabulating-machine operating	100.0	69.5	19.7	9.4	1.3
Routine clerical record-keeping	100.0	66.5	23.2	6.9	3.4
Calculating-machine operating	100.0	53.2	39.5	3.0	4.3
Keypunch operating	100.0	12.4	36.5	48.5	2.6
Supervisors of above groups	100.0	16.7	63.5	14.6	5.2

NOTE: Because of rounding, sums of individual items may not equal 100.0.

The elimination of positions in these groups did not necessarily result in the loss of employment for those affected. Although the mail survey did not collect data about effects on individual workers, information from interviews with personnel officials; case studied by the Bureau of Labor Statistics, State agencies, and university researchers; and discussions in trade journals have supported the general conclusion that few individuals in the insurance industry were laid off as a direct result of the introduction of EDP. Jobs had generally been eliminated without recourse to layoffs through the use of attrition and transfer--procedures that were possible because of the high rate of turnover among young women clerical employees, industry growth, and the creation of some new EDP jobs.

Thus, information from various sources suggests that some tabulating-machine operators (more than half were men)--were transferred to EDP units and retrained as console and peripheral-equipment operators and programers. Since only a small proportion of EDP console and peripheral-equipment operators are women, it may be presumed that women tabulating-machine operators who remained in the office were shifted to other types of work.

Among routine clerical employees, who represented a major proportion of insurance office employment, and calculating-machine operators, a high rate of turnover probably facilitated adjustment without layoffs. Some offices reported that the elimination of some positions because of EDP provided personnel to fill jobs for which no satisfactory applicants were available from the outside.

The impact of EDP on employment of keypunch operators, on the other hand, was affected by varying requirements for this group of employees at different stages of computer technology. About half the responding offices reported that installation of EDP resulted in an increase in keypunch staff; about one-third reported no change; the rest reported a decrease. In the early stages of the transition to EDP, offices sometimes needed to enlarge their staff of keypunch operators in order to convert and consolidate old files to punchcards. Once this initial records conversion was completed, the temporarily large keypunch staff could be reduced. In addition, companies which formerly required a keypunch group in each of many tabulating-machine units could retire these units as their operations were absorbed by EDP.

Regarding the impact on clerical supervisors, a large proportion of offices surveyed reported little or no change in employment. About 17 percent, however, indicated that supervisors declined in number as routine clerical jobs were reduced. Because of lower turnover in these positions, adjustments for supervisors (particularly older employees) probably constituted one of the more difficult personnel problems.

Table 11. Employment Changes Expected for Occupational Groups During 1963-66 Among 206 Companies with Computers in Early 1963

Occupational group	Total	Percent of responding companies expecting that employment would--			Percent of companies not responding to this item	Percent of total office employment in each occupational group[1]
		Increase	Decrease	Remain the same		
Tabulating-machine operators	100.0	8.3	63.1	22.8	5.8	1
Stenographers, secretaries	100.0	38.3	4.9	49.0	7.8	7
General clerical workers	100.0	39.8	25.7	27.7	6.8	62
Keypunch operators	100.0	51.5	14.6	31.1	2.9	2
EDP Personnel: Programers, analysts, operators	100.0	55.0	3.1	37.7	4.2	1

[1] Remaining 27 percent of office employment is distributed among managerial, professional, technical, and supervisory groups.

NOTE: Because of rounding, sums of individual items may not add to 100.

Trends in Insurance Occupations

Companies using computers were also asked about employment prospects for key occupational groups, as foreseen at the time of the survey. Table 11 shows the proportion of responding companies that expected employment in five major occupational groups to increase, decrease, or remain the same between 1963 and 1966. On the basis of subsequent discussions with industry experts, it is believed that the trends as seen in 1963 are still valid for the 1966-70 period.

Tabulating-Machine Operators. About two-thirds of the companies operating computers responded that this small group would decrease further. Machine accounting units, particularly in life and health insurance companies, apparently were scheduled for disbandment as their functions are taken over by EDP.

General Clerical Workers. This group, which comprised the major proportion of office employment, would decrease or remain the same, according to a majority of the responding companies. Examples of workers in static or declining clerical jobs are premium ledger card clerks who keep records, premium acceptors who record payments, and policy evaluation clerks who calculate cash surrender and loan values of policies, using rate books and manual calculators.

However, it is noteworthy that about two-fifths of the companies reported that employment would increase, presumably because of business expansion in operations that had not been affected by EDP, the introduction of new automobile rating structures, and the application of new underwriting standards.

Keypunch Operators. Expectations for this occupational group were about evenly divided. Slightly more than half of the respondents expected an increase in employment; about 45 percent expected either a decrease, or stability. Some recently automated companies commented that keypunch work would decline once their records conversion had been completed.

When the expectations of companies that had or planned to have optical scanners are compared with those that did not, the possible impact of this innovation on keypunch operators become apparent (see table 12). Among companies that had scanners or scanner plans, those companies employing over 40 percent of the keypunch operators expected a decrease. Among companies without scanner plans, those employing less than 20 percent of the keypunch operators expected a decrease.

Table 12. Expected Change in Total Employment in Two Selected Occupational Groups by 1966, by Employment in Each Group, All Surveyed Companies Which Responded in 1963[1]

Occupational group	Number of companies responding	Employment		Companies which expected employment to--								
				Increase			Decrease			Remain the same		
		Number	Percent	Number of companies	Employment		Number of companies	Employment		Number of companies	Employment	
					Number	Percent		Number	Percent		Number	Percent
Keypunch operators	226	8,252	100.0	120	3,970	48.1	30	1,977	23.9	76	2,305	27.9
In companies which had or planned to have optical scanners	38	2,155	100.0	16	648	30.1	12	944	43.8	10	563	26.1
In companies which did not have or did not plan to have optical scanners	188	6,097	100.0	104	3,322	54.5	18	1,033	16.9	66	1,742	28.6
Tabulating-machine operators	208	4,357	100.0	18	483	11.1	137	3,428	78.7	53	446	10.2

[1] Some companies excluded because of incomplete response.

Requirements for keypunch operators will be reduced somewhat by increasing use of optical scanners and consolidated systems.

EDP Personnel. The most favorable outlook was reported for EDP personnel. About 55 percent of the companies reported that they expected to increase employment in this occupational group (table 11); only 3 percent expected a decrease. Additional computer applications and company growth presumably were chief reasons for this anticipated growth.

Chapter 6. Outlook and Implications for the Next Decade

In assessing the outlook for insurance employment over the next 10 years, it is important first to review trends over the past decade. The period was one of significant changes in the structure of the industry and in the type of services sold, and witnessed the first steps taken in applying EDP technology to handle the tremendous volume of paperwork that accompanied the industry's growth. Employment increased significantly. Definitive quantitative data are not available to measure the changes in labor requirements in relation to the volume of insurance services produced.

Prospects for Next Decade

Office employment will probably continue to increase, but the rapid growth rate of the past will probably be significantly diminished. Contributing to office employment growth will be the rise in policy sales as personal income, auto purchases, home ownership, and a rising stock of insurable goods continue to increase. The age group 15-44 years, which has accounted for a major portion of insurance purchases in recent years, will be increasing. New types of policies, options, and packages will probably continue to be devised, and may be expected to result in increased employment.

EDP will probably have a growing impact in reducing unit labor requirements among office workers in the industry. The first decade for EDP was a period of introduction, diffusion, and improvements in EDP equipment, and gradual implementation of a "total" EDP system by bringing major insurance operations, one after another, into the computer system. The potentialities of EDP were only beginning to be explored. The next decade will see the gradual introduction of more powerful, "third generation" computers, and, perhaps more important, the more intensive utilization of computers through the consolidation of operations, data transmission systems, and input automation. As EDP is more fully developed, the rate of productivity increase will probably also rise.

These technological developments are expected to reduce substantially the rate of office employment growth in the insurance industry. By 1975, office employment in insurance carriers, according to estimates, will range from 700,000 to 735,000, representing an increase of 5 to 10 percent over 1965. Total employment in insurance carriers which increased about 32 percent in the 1954-64 period, may grow more rapidly from 1965 to 1975 than office employment because of greatly increased policy sales and sales force. Offsetting factors, such as mergers, increasing coverage of group insurance and self-insurance, and use of direct selling techniques may have a retarding effect on the growth in sales personnel. It is assumed that continued growth in insurance services, in terms of policies issued, will be at about the same rate as in the past few years, but that there will be at least a doubling in the rate of increase of policies per office employee. Health insurance carriers will probably show a higher growth rate than life or property carriers, unless increasing health business is assumed by these latter industry branches.

This study suggests that employment in occupations directly related to EDP and management--managers, programers, systems analysts, console and other operators--will rise, that employment of keypunch operators may decline by 1970, and that the largest group of office employees will continue to be the general clerical group. For this latter group, the study indicates that the number of workers employed for routine operations will be greatly reduced because of EDP, but that the number of those in jobs requiring some judgment and decisionmaking--jobs that cannot be computerized, or that involve individualized response to policyholders--will remain constant.

Manpower Implications

Some of the findings of this study have important implications for manpower trends and development for the economy, for the insurance industry, and for some cities where the industry employs a substantial proportion of the white-collar labor force.

First: a slowdown in the rate of employment increase in a major white-collar industry could make the general problem of adjustment to technological change more difficult. Thus far, rapid growth of office jobs in insurance has provided many openings each year for young girls graduating from high school. Although this source will not disappear, entry jobs will not be available to the same extent as in the past. At the same time, the number of young women entering the labor force will be increasing rapidly.

Second: slower growth of clerical jobs in insurance is likely to have particularly serious impact in cities where insurance companies have been one of the major sources of employment opportunities for young women--for example, Des Moines, Iowa; Omaha, Nebr.; Hartford, Conn.; Jacksonville, Fla.; Portland, Maine; and Springfield, Ill. Vocational guidance counselors and others in these and similarly affected localities will need to be prepared for these changing prospects.

Third: employee adjustments may become a more difficult personnel problem in the future than in the past, for employees and personnel departments. Since the recruitment of young high school graduates is expected to taper off, high labor turnover--which provided the basis for attrition policies in adjusting to office automation--may no longer be relied upon to avoid displacement of employees. As EDP is extended to additional areas, personnel management will need to exercise a variety of manpower adjustment techniques so that further advances in office automation will continue without serious personal problems to the affected workers.

Finally, personnel offices will probably become more selective in their choice of individuals for entry positions in insurance companies. While electronic data processing reduces opportunities in routine clerical work, some positions are created in programing, sales, and other complex work which require longer training or more education. Those who have the capacity to be trained for more responsible work and are seeking a career may be preferred.

Appendix A. Notes on Survey Methods

The method of selecting the companies surveyed, the development of the questionnaires, and the procedures used in conducting the survey are described below. Copies of the questionnaires and covering letters are also presented.

Selection of Sample

A large cutoff sample was used in making this survey. The list of companies included in the survey was developed in part from establishment listings set up by State Employment Security agencies in connection with reports received under unemployment insurance programs. All establishments (or offices) classified in SIC 631 (life insurance); SIC 632 (accident and health); SIC 633 (fire, marine, and casualty); SIC 635 (surety); and SIC 636 (title insurance) which reported a total of 250 or more employees were selected as the basis for developing a list of companies. Over 500 establishments were selected and then grouped by company. This grouping yielded about 200 companies, each with at least one establishment of 250 workers or more.

Next, the names of 200 smaller companies were added to the list. One hundred life insurance companies were added by selecting every sixth name on a list (excluding those already chosen) entitled "Ranking of 716 Life Companies" (1962), published by the National Underwriter. Every 13th company was selected from a list in Best's Insurance Reports (Fire and Casualty edition, 1962), excluding those already chosen. A number of these smaller companies were later combined with large companies, having responded that they were subsidiary to, or otherwide affiliated with, a large company. Companies or company groups were placed in that category (life, health, property) which accounted for the greatest proportion of their total business. The final result was a sample of 423 companies, with about nine-tenths of the industry's employment.

Survey Questionnaires and Procedures

Separate questionnaires were developed for two stages of the study. A brief screening questionnaire, designed to provide information on the company's employment and computer status (see first questionnaire in this appendix), was developed in consultation with industry associations and officials in charge of EDP operations in a number of insurance companies. The screening survey also requested that companies with more than one computer center indicate the total number operating. The questionnaire was mailed with a covering letter to the presidents of 423 companies. Responses were received from 410 companies or 97 percent of those surveyed, with employment comprising 89 percent of all industry employment, as of January 1963. Results of this survey are presented by company, office employment, and computer status, in table 1.

The second stage of the survey involved collection of detailed information about use of the computer system, effects on employment, and occupations.

Three versions of a basic questionnaire were developed in consultation with industry experts: one was specifically designed for companies which had their own computers; a second for companies which had ordered their first computer, but had not yet installed it; and a third, for companies which were renting time from a service bureau: Companies which fit into more than one of these categories (for example, the second and third), were placed in the category with the lowest number.

To obtain information about each computer installation in companies which might have several EDP offices throughout the country, the questionnaire for companies in group (1) was designed so that a second part could be sent in multiple copies, one for each EDP installation.

The questionnaires were pretested with five companies in each of the three industry subdivisions. On the basis of this trial, the questionnaire was slightly modified.

From responses to the screening survey, a list of companies was developed for the second stage. Appropriate second stage questionnaires were sent to 305 companies: 253 to companies with computers; 25 to companies awaiting delivery of their first computer; and 27 to companies renting time from a service bureau. The response rate was 81 percent for all companies; 81 percent, companies with EDP; 80 percent, companies awaiting delivery of their first computer; and 74 percent, companies renting time from a service bureau. Followup letters were sent and telephone calls were made to nonresponding companies. Since the questionnaire was detailed, responses came in over a period of several months.

To insure accuracy, a postediting followup procedure was adopted. After the questionnaires had been edited for internal consistency, those with possible discrepancies were returned to respondents for correction, if necessary, or explanation. Approximately 100 companies were contacted in this way.

In addition, after all results were tabulated, a number of companies (with about a sixth of the survey employment) were visited by the analysts for information which might be of help in interpreting patterns revealed by the data collected, particularly in the area of future plans for EDP applications, and possible employment effects of these plans.

In tabulating the data, the classification of computers into "large," "medium," and "small" was based upon rental price range for the basic control unit.

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D.C.

Dear Sir:

For several years the Bureau of Labor Statistics has been studying the effect of electronic data processing on office work. Reports based on this research have been used by management, educators, and industry associations, as well as by government, in assessing the effects of office automation on personnel requirements, training, and personnel practices.

One of our current studies is a survey of the extent, uses, and effects of electronic data processing in the insurance industry. Before we send a detailed questionnaire to those companies which use or have ordered computers, we need to have some preliminary information. Therefore, we would appreciate it if you would let us have the data requested on the enclosed form.

All information collected will be treated confidentially. No reports issued will identify individual companies in any way.

Your cooperation will be of the greatest assistance to the Bureau of Labor Statistics. We should appreciate having your reply, if possible, by April 4, in order that we may complete this step in the survey.

Sincerely yours,

Ewan Clague

Ewan Clague
Commissioner of Labor Statistics

Enclosure

BLS 2809

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D.C.

Budget Bureau No. 44-6302
Approval expires 12-31-63

Survey of Electronic Data Processing in Insurance

Your reply will be held in strict confidence.

Company code ☐☐☐

1. Please give the number of employees, full- or part-time, on the payroll of this company (including home, branch, and agency offices) for the pay period ending nearest January 15, 1963.

   a. Total employees for entire company (include agents on commission, office, and all other personnel) . . . . . _____

   b. Total office employees (exclude agents and custodial employees, but include home office, branch, and agency office personnel). Total . . . . . _____ Male . . . . . _____ Female . . . . . _____

2. Please check each of the following statements "yes" or "no" according to whether it is, or is not, applicable to this company.

   a. This company owns/rents one or more electronic computers (or shares a computer owned/rented with other insurance companies). ☐ Yes ☐ No

      If checked "yes", give number of locations (including home, branch, and field offices) at which computers are installed . . . . . _____

   b. This company rents computer time from a computer service bureau or other computer center. . . . . ☐ Yes ☐ No

   c. This company has one or more computers on order (either alone or in a share arrangement). . . . . ☐ Yes ☐ No

   d. This company plans to install one or more computers within the next five years, for which an order has not yet been placed. . ☐ Yes ☐ No

   e. This company does not plan to install a computer within the next five years. . . . . ☐ Yes ☐ No

_____
(Name and title of person to be contacted if questions arise concerning the report)

_____
(Address)

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D.C.

Dear Sir:

Several months ago you furnished us, in reply to our March 18 inquiry, some information concerning your company's use of electronic data processing equipment. This information has been very useful and your cooperation is very much appreciated.

As noted in our first letter, the form you filled out was preliminary to a more detailed study. In order to complete the study we need to have the information requested on the enclosed questionnaire. If affiliated or subsidiary companies share your computer facilities, please respond for the group as a whole and list the included companies on a separate sheet.

This survey is being conducted in response to widespread interest in the extent and implications of electronic data processing in businesses such as insurance. Your response will be kept confidential. Published findings of the survey will not identify individual companies in any way.

We will greatly appreciate your cooperation in completing and returning this questionnaire.

Sincerely yours,

Ewan Clague

Ewan Clague
Commissioner

Enclosures

Sent to companies with computers ☐☐☐

BLS 2809-II-A

BUDGET BUREAU NO. 44-R307
APPROVAL EXPIRES 12-31-48

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D.C.

Survey of Electronic Data Processing in Insurance

Report for:

Your reply will be held in strict confidence.

1. Please fill in the columns describing each computer now or previously owned or rented, or on order by this company or group,* using one *line for each computer.* (Use extra sheets if needed.) Describe computers which are: *Currently installed; on order; previously used, but no longer in operation.*

   Do not include card calculators and EAM equipment (sorters, tabulators, reproducers, collators, calculators—e.g., IBM 604, 609, 610; Univac 40, 60, and 120).

Manufacturer	Designation or name and model number of computer	Computer location (city/state)	Insert applicable dates (month/year)		If machine retired from operation, indicate reason, and designation of machine which replaced it (if any)	Ownership arrangement (check one)		
			Date installed or to be installed	Date retired from operation		Owned	Rented from Manuf.	Rented from other source
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐
						☐	☐	☐

*Note: If a computer is shared with other companies, please list names of other companies below, but complete the description of the computer in the table above.

Name and model number of shared computer: _____

(co. name) (address)

(co. name) (address)

(co. name) (address)

(co. name) (address)

(co. name) (address)

2. If any offices of this company regularly rent computer time from an outside computer service bureau or from some other firm with a computer, please fill in the information requested below.

Location of offices which rent computer time *(city/state)*	From what source is time rented?		*(if applicable)* Do you expect to continue renting time when computers now on order are installed?	
	Computer service bureau	Other firm with computer	Yes	No
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐

3. If this company uses or is planning to use any of the types of equipment listed below, please fill in the information requested.

Equipment	Check if *Yes*			Functions for which equipment is/will be used *(e.g., status inquiries, claim filing premium billing).*
	Have now	Have on order	Definitely planning to order	
Data transmission *(e.g., dataphone, transceiver)*	☐	☐	☐	
Optical scanning	☐	☐	☐	
Magnetic ink character recognition	☐	☐	☐	
Mark sensing	☐	☐	☐	

4. Taking into account your expectations concerning business expansion (or contraction), as well as plans for EDP and other company changes, what is your estimate about changes in employment in the specified categories--*for the entire company in the next three years?* (Please do not limit your estimate to the EDP operations, or to any single sector of the company. We are here attempting to find out what skills will be most needed in this industry. We would appreciate further comments on the bottom of this sheet.)

Occupational category	Estimated company employment Jan. 1963 *	In next *three* years, expect total company staff, in this category, to			Reason or assumption on which this expectation is based (*e.g., "business growth", "merger", "EDP adoption"*)
		Expand	Remain same	Decrease	
Professional and technical					
Programers		☐	☐	☐	
Systems analysts		☐	☐	☐	
All other, prof. & tech.		☐	☐	☐	
Sales (*agents, etc.*)		☐	☐	☐	
Managerial (*company officers, dept. managers, etc.*)		☐	☐	☐	
Clerical					
Conventional-type EAM operators		☐	☐	☐	
Keypunch operators		☐	☐	☐	
Electronic data processing operators (*e.g., console op.*)		☐	☐	☐	
Stenographers and secretaries		☐	☐	☐	
Supervisory		☐	☐	☐	
All other clerical (*e.g., typists, clerks, etc.*)		☐	☐	☐	

* Estimates should approximate total employment figures given in question 5.

5. Employment: Please give number of full and part-time employees *on the payroll of this company* (including all branch and company agency offices) during the pay period ending nearest January 15, for each of the requested years.

	Payroll period ending nearest January 15, ____			
	1963	1960	1957	1954
All employees, total for entire company (include agents on commission *if employees*, office and EDP personnel, and all other employees)				
Office employees, total for entire company				
Total				
Male				
Female				
Agents, if employees (a)				
Custodial and other non-sales, non-office employees				
Total number of employees performing work directly associated with the EDP system (b)				

(a) Do not include agents acting as independent contractors.

(b) A list of EDP occupations appears on the yellow sheet enclosed with the individual installation form.

FOR LIFE COMPANIES ONLY

For December 31 in each of the listed years, please fill in the requested information below.

	December 31, 1962	December 31, 1959	December 31, 1956	December 31, 1953
Total number of individual policies in force				
Life				
Other				
Total number of group certificates in force				
Life				
Other				
Total dollar amount of life insurance in force				

(Name and title of person to be contacted if questions arise concerning the report.)

(Date of report)

BLS 2809-II-A (Cont'd.)
Individual Installation
Form

U.S. DEPARTMENT OF LABOR
Bureau of Labor Statistics
Washington 25, D.C.

BUDGET BUREAU NO. 44-6307
APPROVAL EXPIRES 12-31-63

Survey of Electronic Data Processing in Insurance

Your reply will be held in strict confidence.

These questions, 6 through 9, refer specifically to individual computer installations. Please fill out a separate set of answers for each location.

Report for:

Location of this installation (office) _____
(city, state)

Name and model number of computer(s) at this installation _____

6. Please indicate any current or planned applications of the EDP system in this office by checking one box on each line.

Application or function	Not applicable in this company	Not now affected, and not planned for EDP	Now fully operational on EDP system *(give year in which placed on EDP)*	Not now operational in EDP system, but planned for EDP			
				Within 1 year from now	Within 2-3 yrs. from now	Within 3-5 yrs. from now	Indefinite plan
a. Policy issue	☐	☐	☐ _____	☐	☐	☐	☐
b. Underwriting	☐	☐	☐ _____	☐	☐	☐	☐
c. Premium billing	☐	☐	☐ _____	☐	☐	☐	☐
d. Premium accounting	☐	☐	☐ _____	☐	☐	☐	☐
e. Policy loan accounting	☐	☐	☐ _____	☐	☐	☐	☐
f. Policyholder dividend accounting	☐	☐	☐ _____	☐	☐	☐	☐
g. Stockholder dividend accounting	☐	☐	☐ _____	☐	☐	☐	☐
h. Investment records: Mortgage loan accounting	☐	☐	☐ _____	☐	☐	☐	☐
i. Other investments	☐	☐	☐ _____	☐	☐	☐	☐
j. Valuation of reserves	☐	☐	☐ _____	☐	☐	☐	☐
k. Reserve for unpaid claims	☐	☐	☐ _____	☐	☐	☐	☐
l. Unearned premium reserves	☐	☐	☐ _____	☐	☐	☐	☐
m. Agency (producer) statistics	☐	☐	☐ _____	☐	☐	☐	☐
n. Commission accounting	☐	☐	☐ _____	☐	☐	☐	☐
o. Claims processing	☐	☐	☐ _____	☐	☐	☐	☐
p. Actuarial analysis and policy development	☐	☐	☐ _____	☐	☐	☐	☐
q. Reports to statistical agent (fire & casualty)	☐	☐	☐ _____	☐	☐	☐	☐
r. Mortality and/or morbidity studies	☐	☐	☐ _____	☐	☐	☐	☐
s. Personnel records	☐	☐	☐ _____	☐	☐	☐	☐
t. Payroll	☐	☐	☐ _____	☐	☐	☐	☐
u. General accounting	☐	☐	☐ _____	☐	☐	☐	☐
Others (specify) v. _____	☐	☐	☐ _____	☐	☐	☐	☐
w. _____	☐	☐	☐ _____	☐	☐	☐	☐
x. _____	☐	☐	☐ _____	☐	☐	☐	☐
y. _____	☐	☐	☐ _____	☐	☐	☐	☐

At this location, is a consolidated (integrated) systems approach in effect (i.e., in which all major functions are processed through a consolidated master record file)? Yes ☐ No ☐

If yes, on what date did the consolidated system become operational? _____
(month/year)

7. Please fill in requested information for full and part-time employees in occupations directly associated with the EDP system in this office during the payroll period ending nearest January 15, 1963. Brief guideline definitions of occupations are given on the enclosed yellow sheet.

Occupations in EDP unit	Number of EDP personnel			Source of personnel	
	Total	Male	Female	Number selected for EDP unit from within company	Number recruited for EDP unit from outside
All EDP personnel					
Project planners and systems analysts					
Chief programers, Programers I					
Programers II					
Supervisor, data processing system					
Console operators					
Coding clerks					
Keypunch and Verifier operators					
Peripheral equipment operators (e.g., high-speed printer and converter operators)					
Tape librarians, card and tape file clerks					
Electronics mechanics and other machine maintenance workers*					
Receptionists, secretaries, stenographers, typists					
Other (give titles)					
_____					
_____					
_____					

*Note: If machine maintenance is performed by outside employees (e.g., by manufacturer's employees, or a contracting firm), please check here ☐

If programming is done by outside contractor, please indicate proportion of programming work thus handled_____%.

Some occupational guidelines for answering question 7. Employee should be counted in that occupation in which he spends more than 50 percent of his time.

Project planner—Plans and directs installation, modification, and operation of EDP systems. Designs organizational, procedural, and work-flow plans, applying knowledge of management analysis techniques. Prepares budget estimates; may participate in making decisions concerning personnel staffing and promotions.

Systems analyst—Analyses data processing problems to devise computer system requirements, to plan machine layout, and to develop programming procedures.

Programer, chief—Plans, schedules, and supervises preparation of programs to solve mathematical and technical problems, or to process business data by means of EDP equipment: assigns, outlines, and coordinates work of programers.

Programer I—Converts or directs conversion of symbolic statements of technical or business problems into diagrams and language for solution by means of automatic data processing equipment.

Programer II—Selects and modifies standardized programs developed by professional programers.

Supervisor, data processing system—Supervises and coordinates activities of workers who operate computer and its components and peripheral equipment.

Console operator—Monitors and controls electronic computer by interpreting programming instructions and operates central control unit known as a console.

Coding clerk—Converts information into predetermined code for subsequent use by keypunch operator.

Keypunch and verifier operator—Operates keypunch machine to transcribe accounting and statistical data onto tabulating cards. Verifier operator checks accuracy of data punched on tabulating cards using keyboard-type machine which rejects incorrectly punched cards.

Peripheral equipment operators:

High speed printer operator—Operates high speed printing machine to convert information previously recorded on reels of tape into printed records.

Converter operator—Operates machine transferring data from one medium to another, such as cards to tape.

Tape librarian—Classifies, catalogs, and maintains library of reels of magnetic or punched paper tape used for automatic data processing purposes.

Electronics mechanic—Tests, repairs, and adjusts electronic computers and auxiliary electronic equipment. May prepare technical reports describing performance of equipment.

8. Please describe the current shift pattern of employees working directly with the EDP system at this office. If column spacing does not permit full reply, add description on the bottom of this sheet.

Characteristic	I Day shift	II Aft.-Eve. shift	III Night shift	Weekend or other shift
Hours (e.g., 9 a.m.-5 p.m.) — *specify hours*	_____	_____	_____	_____
Days (e.g., Monday-Friday) — *specify days*	_____	_____	_____	_____
Scheduled weekly hours (e.g., 37½, 35) — *give number of hours*	_____	_____	_____	_____
Number of employees	_____	_____	_____	_____
Functions performed during this shift: *(Check appropriate boxes)*				
a. machine operation *(including peripheral)*	☐	☐	☐	☐
b. machine maintenance	☐	☐	☐	☐
c. planning and programming	☐	☐	☐	☐
d. other	☐	☐	☐	☐

Do any office employees, other than those working directly with the EDP system, work an evening or night shift? Yes ☐ No ☐

9. Has employment changed in any of the following categories because of the introduction of EDP in this office?

Number of employees Increased	Decreased	No change	
☐	☐	☐	Routine clerical recordkeeping
☐	☐	☐	Keypunch and verifier machine operating
☐	☐	☐	Electric accounting, tabulating, bookkeeping machine operating
☐	☐	☐	Calculating machine operating (adding machine, comptometer, etc.)
☐	☐	☐	Supervisors of above groups

_____

(Name and title of person to be contacted if questions arise concerning the report.)

_____

(Date of report)

Sent to companies renting time from a computer service bureau ☐☐☐

BLS 2809-II-B

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D.C.

BUDGET BUREAU NO. 44-6307
APPROVAL EXPIRES 12-31-63

Survey of Electronic Data Processing in Insurance

Report for:

Your reply will be held in strict confidence.

1. Please fill in information below concerning each office in this company which rents computer time.

Location of offices which rent computer time *(city/state)*	From what source is time rented?	
	Computer service bureau	Other firm with computer
	☐	☐
	☐	☐
	☐	☐
	☐	☐
	☐	☐

2. Please indicate, by checking the appropriate boxes, any applications for which computer time is rented.

Application or function	Performed (whole or in part) on rented computer time	Done on conventional equipment or manually in this company	Not applicable in this company
a. Policy issue	☐	☐	☐
b. Underwriting	☐	☐	☐
c. Premium billing	☐	☐	☐
d. Premium accounting	☐	☐	☐
e. Policy loan accounting	☐	☐	☐
f. Policyholder dividend accounting	☐	☐	☐
g. Stockholder dividend accounting	☐	☐	☐
h. Investment records: Mortgage loan accounting	☐	☐	☐
i. Other investments	☐	☐	☐
j. Valuation of reserves	☐	☐	☐
k. Reserve for unpaid claims	☐	☐	☐
l. Unearned premium reserves	☐	☐	☐
m. Agency (producer) statistics	☐	☐	☐
n. Commission accounting	☐	☐	☐
o. Claims processing	☐	☐	☐
p. Actuarial analysis and policy development	☐	☐	☐
q. Reports to statistical agent (fire and casualty)	☐	☐	☐
r. Mortality and/or morbidity studies	☐	☐	☐
s. Personnel records	☐	☐	☐
t. Payroll	☐	☐	☐
u. General accounting	☐	☐	☐
Others (specify)			
v. _____	☐	☐	☐
w. _____	☐	☐	☐
x. _____	☐	☐	☐
y. _____	☐	☐	☐

3. Please fill in requested information for full and part-time employees on the payroll of this company (if any) who work with the (time rental) computers, using one line for each occupation.

EDP occupation (e.g., programer, systems analyst, console operator)	Number of employees during payroll period nearest Jan. 15, 1963		
	Total	Male	Female

4. Taking into account your expectations concerning business expansion (or contraction), as well as plans for EDP and other company changes, what is your estimate about changes in employment in the specified categories—*for the entire company in the next three years?* (Please do not limit your estimate to the EDP operations or to any single sector of the company. We are here attempting to find out what skills will be most needed in this industry. We would appreciate further comments on a separate sheet.)

Occupational category	Estimated company employment Jan. 1963*	In next *three* years, expect total company staff, in this category, to			Reason or assumption on which this expectation is based (e.g. *"business growth", "merger", "EDP adoption"*)
		Expand	Remain same	Decrease	
Professional and technical					
Programers		☐	☐	☐	
Systems analysts		☐	☐	☐	
All other		☐	☐	☐	
Sales *(agents, etc.)*		☐	☐	☐	
Managerial *(company officers, dept. managers, etc.)*		☐	☐	☐	
Clerical					
Conventional type EAM operators		☐	☐	☐	
Keypunch operators		☐	☐	☐	
Electronic data processing operators *(e.g. console op.)*		☐	☐	☐	
Stenographers and secretaries		☐	☐	☐	
Supervisory		☐	☐	☐	
All other clerical *(e.g. typists, clerks, etc.)*		☐	☐	☐	

* Estimates should approximate total employment figures given in question 6.

5. Taking into account your expectations concerning business expansion (or contraction), as well as company changes, please check the statement which best applies to your company.

☐ This company probably will rent or buy an EDP system within the next five years.

☐ This company probably will remain on a time rental basis only, for the next five years.

Remarks:

6. Employment: Please give number of full and part-time employees *on the payroll of this company* (including all branch and company agency offices) during the pay period ending nearest January 15, for each of the requested years.

	Payroll period ending nearest January 15,–			
	1963	1960	1957	1954
All employees, total for entire company (include agents on commission *if employees*, office and EDP personnel, and all other employees)				
Office employees, total for entire company				
Total				
Male				
Female				
Agents, if employees (a)				
Custodial and other non-sales, non-office employees				
Total number of employees performing work directly associated with the EDP system				

(a) Do not include agents acting as independent contractors.

FOR LIFE COMPANIES ONLY

For December 31 in each of the listed years, please fill in the requested information below.

	December 31, 1962	December 31, 1959	December 31, 1956	December 31, 1953
Total number of individual policies in force				
Life				
Other				
Total number of group certificates in force				
Life				
Other				
Total dollar amount of life insurance in force				

(Name and title of person to be contacted if questions arise concerning the report.)

(Date of report)

BLS 2009-11-C

Sent to companies with their first computer on order ☐☐☐

BUDGET BUREAU NO. 44-S307
APPROVAL EXPIRES 12-31-63

U.S. DEPARTMENT OF LABOR
BUREAU OF LABOR STATISTICS
WASHINGTON 25, D.C.

Survey of Electronic Data Processing in Insurance

Report for:

Your reply will be held in strict confidence.

1. Please fill in the columns describing each computer on order by this company or group,* using *one line for each computer.* Do not include card calculators and EAM equipment (sorters, tabulators, reproducers, collators, calculators--e.g., IBM 604, 609, 610; Univac 40, 60, and 120).

Manufacturer	Designation or name and model number of computer	Planned computer location *(city/state)*	Date to be installed *(month/year)*	Ownership arrangement *(check one)*		
				Owned	Rented	
					From manufacturer	From other source
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐
				☐	☐	☐

*Note: If a computer will be shared with other companies, please list names of other companies below, but complete the description of the computer in the table above.

Name and model number of shared computer: _____

(co. name) (address)

(co. name) (address)

(co. name) (address)

(co. name) (address)

(co. name) (address)

(co. name) (address)

2. If any offices of this company regularly rent computer time from an outside computer service bureau or from some other firm with a computer, please fill in the information requested below.

Location of offices which rent computer time *(city/state)*	From what source is time rented?		*(if applicable)* Do you expect to continue renting time when computers now on order are installed?	
	Computer service bureau	Other firm with computer	Yes	No
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐
	☐	☐	☐	☐

3. If this company uses or is planning to use any of the types of equipment listed below, please fill in the information requested.

Equipment	Check if *Yes*			Functions for which equipment is/will be used *(e.g. status inquiries, claim filing, premium billing).*
	Have now	Have on order	Definitely planning to order	
Data transmission *(e.g., dataphone, transceiver)*	☐	☐	☐	
Optical scanning	☐	☐	☐	
Magnetic ink character recognition	☐	☐	☐	
Mark sensing	☐	☐	☐	

4. Taking into account your expectations concerning business expansion (or contraction), as well as plans for EDP and other company changes, what is your estimate about changes in employment in the specified categories--*for the entire company in the next three years?* (Please do not limit your estimate to the EDP operations, or to any single sector of the company. We are here attempting to find out what skills will be most needed in this industry. We would appreciate further comments on a separate sheet.)

Occupational category	Estimated company employment Jan. 1963 *	In next *three* years, expect total company staff in this category to			Reason or assumption on which this expectation is based *(e.g., "business growth", "merger", "EDP adoption")*
		Expand	Remain same	Decrease	
Professional and technical					
Programers		☐	☐	☐	
Systems analysts		☐	☐	☐	
All other, prof. & tech.		☐	☐	☐	
Sales *(agents, etc.)*		☐	☐	☐	
Managerial *(company officers, dept. managers, etc.)*		☐	☐	☐	
Clerical					
Conventional-type EAM operators		☐	☐	☐	
Keypunch operators		☐	☐	☐	
Electronic data processing operators *(e.g., console op.)*		☐	☐	☐	
Stenographers and secretaries		☐	☐	☐	
Supervisory		☐	☐	☐	
All other clerical *(e.g., typists, clerks, etc.)*		☐	☐	☐	

*Estimates should approximate total employment figures given in question 6.

5. Please indicate any planned applications of the EDP system to be installed in this company by checking one box on each line.

Application or function	Not applicable in this company	Not planned for EDP application	Planned for EDP operation			
			Within 1 year from now	Within 2-3 yrs. from now	Within 3-5 yrs. from now	Indefinite plan
a. Policy issue	☐	☐	☐	☐	☐	☐
b. Underwriting	☐	☐	☐	☐	☐	☐
c. Premium billing	☐	☐	☐	☐	☐	☐
d. Premium accounting	☐	☐	☐	☐	☐	☐
e. Policy loan accounting	☐	☐	☐	☐	☐	☐
f. Policyholder dividend accounting	☐	☐	☐	☐	☐	☐
g. Stockholder dividend accounting	☐	☐	☐	☐	☐	☐
h. Investment records: Mortgage loan accounting	☐	☐	☐	☐	☐	☐
i. Other investments	☐	☐	☐	☐	☐	☐
j. Valuation of reserves	☐	☐	☐	☐	☐	☐
k. Reserve for unpaid claims	☐	☐	☐	☐	☐	☐
l. Unearned premium reserves	☐	☐	☐	☐	☐	☐
m. Agency (producer) statistics	☐	☐	☐	☐	☐	☐
n. Commission accounting	☐	☐	☐	☐	☐	☐
o. Claims processing	☐	☐	☐	☐	☐	☐
p. Actuarial analysis and policy development	☐	☐	☐	☐	☐	☐
q. Reports to statistical agent (fire and casualty)	☐	☐	☐	☐	☐	☐
r. Mortality and/or morbidity studies	☐	☐	☐	☐	☐	☐
s. Personnel records	☐	☐	☐	☐	☐	☐
t. Payroll	☐	☐	☐	☐	☐	☐
u. General accounting	☐	☐	☐	☐	☐	☐
Others (specify) v.	☐	☐	☐	☐	☐	☐
w.	☐	☐	☐	☐	☐	☐
x.	☐	☐	☐	☐	☐	☐
y.	☐	☐	☐	☐	☐	☐

6. **Employment: Please give number of full and part-time employees *on the payroll of this company* (including all branch and company agency offices) during the pay period ending nearest January 15, for each of the requested years.**

	Payroll period ending nearest January 15, ____			
	1963	1960	1957	1954
All employees, total for entire company (include agents on commission *if employees*, office and EDP personnel, and all other employees)				
Office employees, total for entire company — Total				
Male				
Female				
Agents, if employees (a)				
Custodial and other non-sales, non-office employees				
Total number of employees performing work directly associated with the EDP system				

(a) Do not include agents acting as independent contractors.

FOR LIFE COMPANIES ONLY

For December 31 in each of the listed years, please fill in the requested information below.

	December 31, 1962	December 31, 1959	December 31, 1956	December 31, 1953
Total number of individual policies in force				
Life				
Other				
Total number of group certificates in force				
Life				
Other				
Total dollar amount of life insurance in force				

_____

(Name and title of person to be contacted if questions arise concerning the report.)

_____

(Date of report)

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